American Aviation

25c — *The Air Industry's Pioneer Independent Magazine* — Nov. 15, 194

Union Means Strength

A GLANCE at a calendar of aviation events, meetings and conventions for any one year would convince the most skeptical that those who are concerned one way or another with the airplane are the meetin'est bunch of people in the world.

Even excluding the numerous airfield shows and races, it would be a full-time job just to attend all of the gatherings being held between the two coasts which are concerned with various problems in the planning, financing, maintenance, operation, regulation and promotion of the airplane and the landing fields which the airplane uses.

by W. W. P.

It might be said that the aviation fraternity is in continuous session. An adjournment is not until the next year but to another meeting next week in a city 1,500 miles away.

Each aviation group has its own particular problems and quite often these problems are in conflict with the objectives of other groups. Yet there is a common bond in aviation and a great many common problems and objectives which, with a little practical thinking, might be coordinated for the good of all.

Individually each aviation group exerts relatively little influence on national policy. Collectively they could represent a fairly large and a fairly important segment of the American public. It is far too much to expect all aviation organizations to think and act alike, and indeed there is no reason at all why they should. But, collectively, they could wield a strong and healthy public relations influence with the public.

We have read with interest the announcement by the National Aeronautic Association that it has replaced its annual Clinic with a representative national aviation meeting to be held in Washington December 15-17. The purpose of the meeting will be an attempt to resolve out common opinion on a number of aviation's biggest problems as a guide to legislative enactment and government policy.

Here, it seems to us, is a nucleus of a constructive idea, a way in which NAA may find its rightful place as a umbrella-like leader for all of the many aviation organizations.

The idea has been attempted unsuccessfully in the past but this is no barrier to another effort. William [illegible] president of the Federation Aeronaut-

(Turn to Page 8)

Leads Unity Move With Airlines

John Burke, operator of Wiley Post Airpark, Oklahoma City, one of the pioneer fixed base operators in the southwest, has taken the leadership in the CAA Fourth Region to bring about better understanding and coordination between the scheduled air transport industry and local operators. His movement is spreading. (See Page 19).

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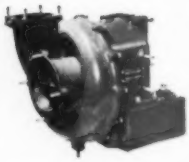

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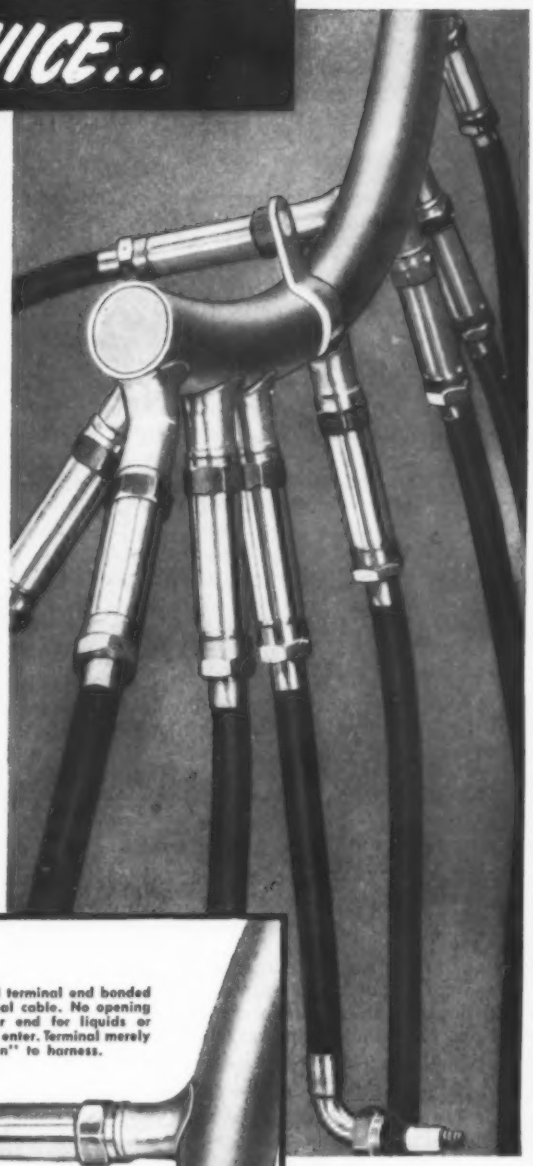

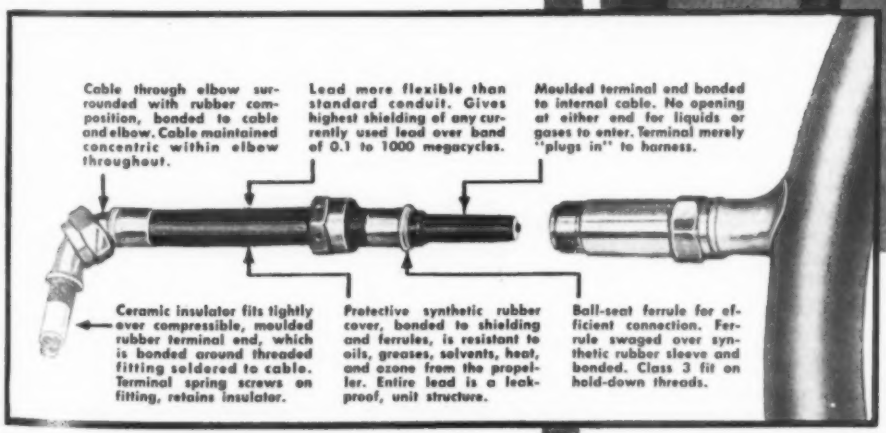
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News in Brief

Development of jet-powered transports will receive no allocation whatever from current Air Force funds, it has been learned. AF attitude is that jet transport is a problem for civil aviation. Manufacturers have held discussions with the Department of Commerce in regard to a subsidy construction fund, similar to the maritime setup, and the Air Coordinating Committee is studying the matter. But early action toward jet transport construction seems dependent on special legislation.

The flight training study, made by Stanford University to evaluate the cost, efficiency, and desirability of having civilian flight schools handle the Air Force's basic training program, has been classified as "Secret" by the AF. Officially, the AF will not even admit that Stanford is handling the study, which is now practically complete.

Canadian Pacific Air Lines, Ltd., has received a foreign air permit from CAB authorizing service to Honolulu on CPA's route between Canada and Australia or New Zealand. The grant permits CPA to make operational stops at San Francisco, while serving Honolulu as a regular traffic point.

Sale of a limited number of commercial aircraft and parts to Yugoslavia is now permitted. With Defense Department approval, the State Department has asked other Western nations to grant similar concessions.

Winter schedules of United Air Lines, which became effective last week, are the most extensive ever operated by the company and provide 11% more available seat miles than last winter. DC-6's account for almost 70% of available seat miles scheduled.

Skydrol, the fire resistant hydraulic fluid, has been approved by CAA for use in commercial passenger planes, including the high pressure system of the Douglas DC-4 and DC-6. Skydrol was developed by Douglas Aircraft Co. and is now being manufactured by Monsanto Chemical Co. The Douglas Super DC-3 now touring the country is equipped with the fluid.

Los Angeles Airways, the pioneer helicopter mail operator, is making significant strides toward instrument operations. About 25 landings in zero conditions have already been made, it is reported, and the company is now trying to obtain instrument operating authority over its system of suburban routes. Many technical experts had doubted that helicopters could operate in instrument weather for many years to come but L. A. Airways installed equipment in the cockpits of its Sikorskys and has had successful results to date.

The **Air Line Pilots Association** will give "first priority" to obtaining monthly mileage limitations in contract negotiations with the airlines, beginning immediately. David L. Behncke, president of ALPA, has cited a National Labor Board decision in support of the program.

Trans World Airline hopes to work out its DC-3 replacement problem "fairly soon," and British transports have been ruled out, according to Ralph S. Damon, TWA president. He said TWA is curtailing substantially its DC-3 mileage this winter because the prewar transport has become an "economic liability" due to passenger preference for faster and more modern airliners. Under consideration as replacements are the Douglas Super DC-3, the Martin 2-O-2 and the Convair Liner.

Vickers-Armstrong has released information indicating that the price of the turboprop-powered Viscount will be approximately $475,000. This is contrary to earlier reports that the ship would sell for about $320,000, a statement released during the SBAC Display in September by responsible sources in Britain.

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NEW RESEARCH METHODS REVEALED

Unique AiResearch laboratory facilities simulate operations of jet engines for testing of high pressure air cooling turbines

AiResearch laboratory (test cell in inset) where turbines are tested under exact temperatures and pressures encountered in high altitude sonic-range flight

Flying at high altitudes and sonic-range speeds, jet planes generate terrific heat in their cabins. For pilot and crew comfort, AiResearch has developed high speed refrigeration turbines which convert high pressure, high temperature air bled from the jet engines into cool air to cool cabin interiors.

To deliver maximum efficiency, such turbines must operate in *exact ratio* to the pressure and volume of air bled off jet engines. Therefore, in order to test refrigeration turbines before installation, it was necessary for AiResearch to create a laboratory that simulates the actual operating conditions of jet engines.

This unusual laboratory produces exact air bleed-off conditions created by six of the newest type jet engines. Here AiResearch compressors and furnaces manufacture compressed air from 100°F to 1000°F at 100 psi. Special control valves regulate temperature within 1°F and pressure within 2/10 in. Hg. This is another example of AiResearch's ability to exceed in the laboratory the most exacting and critical conditions of flight.

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Jets Are Wonderful, But—

Does the present status of jet transport development in Great Britain and Canada mean that turbine-powered transports will be accepted in the U. S. within the next few years? We think not.

While admiring the accomplishments of the foreign manufacturers in this field, and regretting that there have been no parallel developments in the U. S., we recognize the general limitations, and limitations peculiar to the U. S., which raise serious doubts as to when such transports will be practical by existing standards here.

These may be summarized as the limitations of economics, safety, technological development and practical application. Each is a key factor.

To obtain the inherent benefits of turbine powerplant, the aircraft must be designed around the engines. Many schools of thought claim the engines must be buried within the wings or fuselage for optimum aerodynamic cleanliness.

Regardless of this, even if the engines are mounted externally on struts or buried in the fuselage, aerodynamic refinements are necessary to produce an economic design for speeds in the 400-500 mph range. In attempting to obtain this aerodynamic cleanliness, the structural integrity of the aircraft is seriously challenged. Engineering ingenuity can overcome these limitations but only at a high price in development cost.

The minimum cost of development for a prototype jet transport has been placed at well over $20,000,000. Writing off this development cost in a commercial venture, even if 100 airplanes were built, will raise initial transport cost at least 75% and possibly 100% But operational characteristics of jet aircraft, particularly the speed, lead us to believe that a fleet of this size, of a given model, is not likely within the next five years.

Where is $20,000,000 in development funds to come from? No answer is immediately available.

Importing of a foreign jet transport design is wholly unlikely. Some airlines are showing what might be termed "active interest." But these same airlines, Pan American and Eastern, had even more "active interests" in the Republic Rainbow and Martin 2-0-2, respectively, for which orders once existed and later dissolved. The major airline that is not thinking about turbine-powered transports is not thinking.

Assuming that such an aircraft is actually constructed, or that we import a foreign model, how will it fit into the present-day pattern of operations? Air traffic control problems of high-speed aircraft are serious. A few aircraft operating on a limited scale could be handled. But realize this: In the present state of turbine-powered aircraft design, jet transports will have to be assigned a specific landing time before take-off.

We have a tentative system to accomplish this end. This is the RTCA common system of navigation. Its projected date for completion is 1963 and its projected cost $1,100,000,000. Optimistically speaking, perhaps it is only one billion dollars and ten years away. We can make room for a limited number of fast-moving aircraft into our commercial airports now, but we can not provide a level of safety consistent with airline operations.

This air traffic control problem revolves around fuel requirements and speed of this airplane. A fast airplane requires more space than a slow one. At 495 mph, and using a 15 degree bank, it requires a 23-mile lane for a turn. If this turn is to be made from either side of a fixed track, a 46-mile-wide lane would be necessary.

Jets can be slowed down and can be brought from their operational altitude of 25,000-40,000 ft. into the normal range of control operations. But when this occurs, fuel consumption is increased many fold. During holding operation, awaiting clearance to land, the turbojet transport burns three times as much fuel as a comparable reciprocating engine.

In the air, a turbojet transport planning a 750-mile flight with 200-mile reserve would require 22,360 pounds of fuel if the flight were to be conducted at 35,000 ft. altitude. But should a pressurization failure force it down to 10,000 ft., 14,590 additional lbs. of fuel would be required. Where would it come from?

We do not have unleaded low-volatility fuel in sufficient quantity to support wide-scale transport operations. Although new refining facilities may ease this situation eventually, basic limitations of source are prominent. Our airports are totally unequipped to handle another grade of fuel in storage for this purpose. Even the limited use of grade 108/135 fuel for Stratocruiser operations has presented serious difficulties. Add this to the complexity offered in transporting an additional grade from the refinery to the airport and airplane, and economic problems are doubled.

Inherently, low-octane fuels are a safety feature presenting less fire potential. Actually the thin wing of a fast transport leaves little space for fuel. From a safety standpoint, fuel in the fuselage, where it is stored in large military aircraft, is impossible. It is necessary to utilize every inch of space in the wing area, including the wing center section, for fuel tankage. This results in a dangerously close relationship between the fuel supply, engines and passengers. Where is the line to be drawn?

Unfortunately commercial jet engine development in this country is in its infancy. The needs met by military engines are of small import to commercial applications. Reliability, expressed in long overhaul periods, and low-cost overhauls, expressed in cost per hour of flight time achieved, are nonexistent. It has not been proved that these exist in Britain's finest efforts, although many claims are made. Overhaul cost runs four of five times as high as that of conventional engines because of high replacement part costs. Mass production and improvements in metallurgical design will alter this.

Airports, and specifically runways, suited to jet aircraft operation are scarce, even in the U. S. There is a total of 28 airports, including the military fields, which can accommodate jet aircraft.

Pressurization and structural integrity to handle pressurization at 40,000 ft. has not yet been proved. Explosive decompression is an imminent possiblity and a lost passenger would be serious. Gust alleviation, critical to structural needs and passenger comfort, is nonexistent. In cruising operations gusts may be avoided but not so in letting down from altitude.

The British are going to solve some of these problems for us. But it is time for a united program, a program to coordinate airline needs with manufacturer's design proposals, to provide interim air traffic control methods, to match fuel refining developments with engine needs, to sell the government on its proper place in supporting development of the transport, to unite efforts and avoid duplication of effort.

WILLIAM D. PERREAULT

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EDITORIAL

(CONTINUED FROM PAGE 1)

ique Internationale, of which NAA is a member, and at one time on the staff of NAA, endeavoured some years ago to make NAA a coordinating parent body for numerous smaller groups. L. Welch Pogue, former NAA president, envisaged that the National Air Council might be the top policy organization and merge with NAA to bring about a coordination and top policy-making body. But NAC failed to catch the ball.

More recently Louis Inwood, director of aviation for Kansas City, suggested that all or most of the various aviation organizations should hold their annual meetings in the same city in the same week, thus making possible a few joint sessions and an opportunity to mix and exchange ideas and plans. Very few, if any, have the time or the means to attend more than one or two meetings a year. Yet we find an ever-increasing interest among each group in what another group is doing and thinking.

The two airport organizations, the Airport Operators Council and the American Association of Airport Executives, will be meeting next spring at separate locations. The state aviation officials have just met at New Orleans, the Aviation Distributors and Manufacturers Association have just met at French Lick, Indiana, and the National Aviation Trades Association meets very shortly at New Orleans. The NAA will be in St. Louis next June and the big ATA engineering and maintenance conference will meet in Kansas City in early spring. Other local, airline, manufacturing and airport groups will be meeting during the year.

The National Aeronautic Association, it seems to us, must be one of two things. Either it must be the public relations spokesman for the aviation interests to the public, or it must itself be a useful trade organization servicing in a practical manner some special segment of the business. In times past it has had a chance to be the latter, but organizations such as Aircraft Owners and Pilots Association have grown up to do the many servicing and trade jobs necessary.

If NAA succeeds in the job of spokesman, it must be revitalized and grow closer to industry and industry problems. It must regain the confidence of the many aviation organizations now existing. It is a tough job, but it can be done. The national aviation meeting to be held in December is a good starting point. From then on, it seems to us, NAA might well have two objectives, first to persuade many of the groups to hold their annual meetings in the same city, with NAA providing a few joint sessions, and second, to raise funds to establish a really good national aviation headquarters in Washington which would house under one roof the numerous headquarters of individual organizations. Washington is the only major capital in the world without an aviation focal point, club rooms, office space and the like.

Union means strength and there are enough common aviation interests to provide the strength to exert a beneficial influence for the common good.

Completing The Cycle

A PAT on the back has long been due one of the smallest but one of the most effective units in the CAA. This is the airport management advisory service provided by the maintenance and operations branch of the operations division of the CAA Office of Airports.

For years the CAA has aided the design and construction of airports but once an airport was physically completed, the job of operating it was left up to local government. It was like delivering a big tractor without leaving with the customer a booklet on how to operate and maintain it. A few years ago the CAA decided to complete the cycle by providing much-needed advice and guidance to local governmental units on how to operate and maintain airports—and how to make those airports pay for themselves.

There are only twenty men in this small advisory branch but these twenty men have a total of 205 years in aviation, or an average of 20½ years each. This experience record is largely responsible for the unit's success. Heading the branch is William G. Fuller, whose 34 years in aviation included 18 years as manager of Fort Worth's Meacham Field. His assistants in Washington are R. J. Dunahoe, Jr., whose 28 years in aviation as a flyer and fixed base operator also includes eight years as manager of the municipal airport at Roanoke, Va., and P. D. Lucas, who has 24 years experience in aviation and who was Commanding Officer at Eglin Field, Florida, during the war.

Out in the field there is a wealth of experience to help local communities make their airports pay off. Charlie Hanst, who bases in Atlanta, has a record of 30 years in aviation, including eight years as the manager of Love Field, Dallas. Bill Brown, based in Fort Worth, has nine years in aviation and managed Kansas City's municipal air port for about five years. Herbert Whitney, based in Kansas City, has been a local operator, airport manager and a director of aviation for Florida, with a total experience record of 12 years. Joe Hicks, Los Angeles, has 24 years in aviation to his credit; Carl Voelter in the 3rd CAA region has 19; P. J. Hughes in the 1st region has 13; and Irving Allen, in the 7th region, the latest to join the unit, has eight years.

This is the sort of government operation that makes sense and pays dividends. Good operation and maintenance of airports is just as important as sound planning and engineering practices. The CAA can well be proud of its airport advisory service, for in the formulation and dissemination of good business methods for the operation and maintenance of airports is the key to a sound future aviation.

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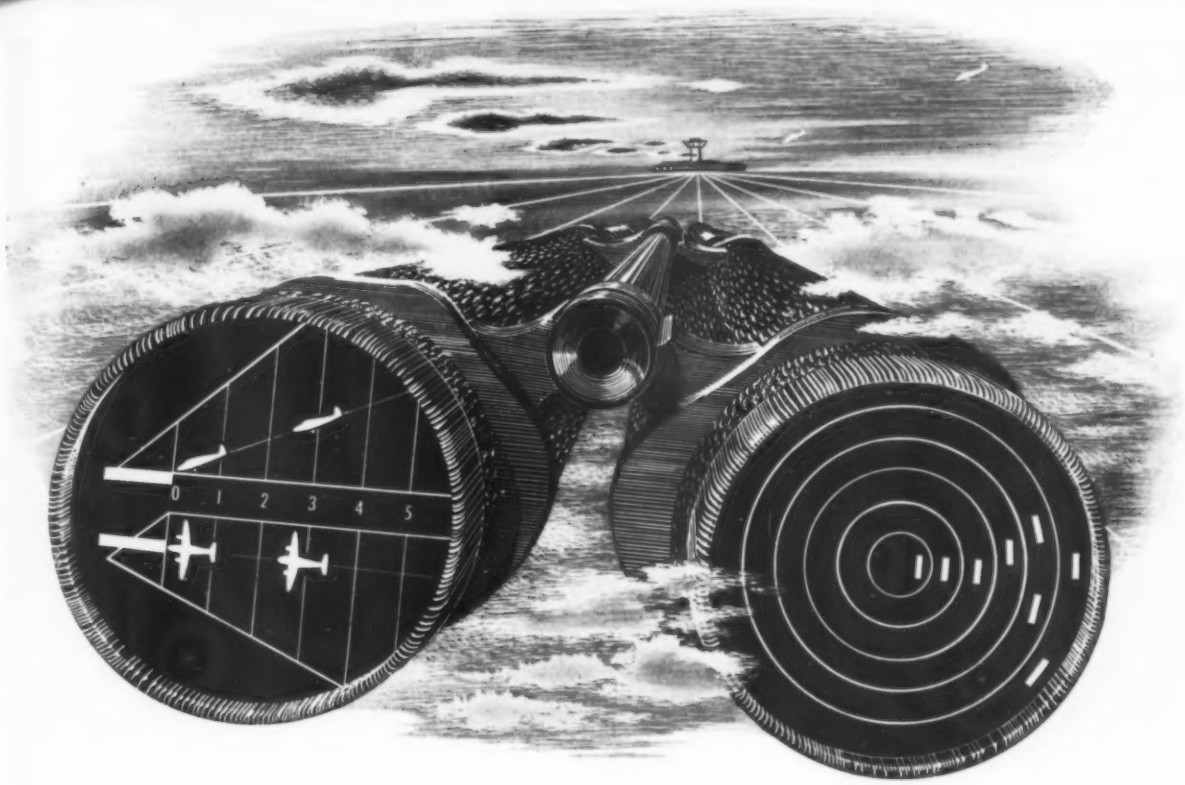
WAYNE W. PARRISH



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Established June 1, 1937

American Aviation

Volume 13 Number 12

Pre-Accident Planning:

Traffic Control at WNA Undergoes Major Rework

By William D. Perreault

For almost six months the Civil Aeronautics Administration, Air Transport Association, and military services have been working out a program to improve traffic handling at Washington National Airport, which on November 1 was the scene of a mid-air collision which turned out to be the worst air tragedy in U. S. scheduled airline history. During the past two weeks the final arrangements have been brought into operation, although certain of the improvements have been in use for two months.

Among the improvements in this area are new and relocated radio range facilities, repositioned range legs, new procedures to route military traffic away from Washington National during instrument flight weather, decommissioning of several fan markers, etc. The improvements completed and programmed for Washington National Airport might well serve as a pattern to improve safety of flight around all major airports.

Immediately after the accident there were calls for legislation and regulation to ban military traffic from the airport, or even from flying over the airport, and to establish new traffic handling procedures—this despite the fact that the P-38 involved was not a military airplane and existing rules were believed adequate to cover the situation.

For some time Washington has been a critical spot for traffic congestion in the air. Within a ten-mile radius of WNA are located three of the country's leading military fields: Anacostia Naval Air Station, Bolling Air Force Base and Andrews Field, home of the Military Air Transport Service. When the weather closes in there are effectively only two airports in the area.

The three fields located on opposite banks of the Potomac River, Anacostia, Bolling and Washington National, become one airport in instrument flight weather. Their physical proximity prevents the use of more than one instrument landing system, located at WNA, and one radio beacon. Although airplanes continue to land at the military fields, the traffic control load is all thrown on the one set of facilities.

Half Military. It has been officially estimated that 50% of the traffic in the Washington area is military. In a typical 18-hour instrument weather period during which CAA kept records of relative types of traffic at WNA, 34% of the arriving and 35% of the departing traffic was military. During the same period, 61% of the arriving and 58% of the departing traffic was air carrier.

With the military services placing increasing emphasis on instrument operations, even for fighter pilots, the condition has been getting worse instead of better. The true significance of this military traffic cannot be evaluated from volume figures alone.

Of nine hours, six minutes time lost to useful purpose at the airport during this particular interval, four hours, 10 minutes loss was the result of communications difficulties. 64% of the communications difficulties were military. Similarly, of two hours and fifty-one minutes wasted in locating missing aircraft, 95% was military. The military flights accounted for 72% of the total lost time.

The work load of the communications center is also sharply raised by military flights. The record shows that an average of 14 contacts were necessary between the pilot and control center from the time the military pilot left the inner stack through the end of his approach. For the same operation, the itinerant aircraft required 11½ contacts and the air carrier pilots slightly over seven contacts.

Groups Cooperate. These are a few of the facts which started the move for improved traffic handling at WNA. The program has required unusually close cooperation between CAA, ATA and the military services. Spark plug in the reorganization has been Chandler Tredick, chief controller in CAA's Washington Air Route Traffic Control Center which controls airways traffic along a sizeable segment of the east coast, south of Philadelphia. The changes, which are now about complete, were programmed by CAA's Office of Federal Airways, headed by Charles Horne, and ATA's Bob Roberts in liaison with the military services.

Through joint agreement of these groups, military traffic in instrument weather operations can be re-routed to Andrews AFB or Patuxent NAS, away from the WNA congestion. Approximately 10% of the present military IFR flights will still be cleared to Washington National but these will be the scheduled MATS operations, VIP and SAM (simulated air mission) flights. About 90% of former military traffic will be re-routed.

Direct Contact. Following a pattern established at Chicago, Washington National Airport controllers are now directly contacting the pilot instead of relaying communications through the communications center. This reduces communication time from two to three minutes per contact. Since communica-

Bell Transport—This is an artist's conception of the new Bell "Feeder-Liner," a 12-passenger helicopter designed for transportation between congested metropolitan areas, outlying airports and suburban sections. Its fuselage constructed entirely of metal, it has been engineered to use either a 600 or 800 horsepower engine to give it a cruising speed of more than 100 mph. There are now three companies prepared to build transport helicopters for passenger service—Piasecki with a commercial version of its Navy HRP "Flying Banana" (10 passengers), Sikorsky with its new S-55 (10 passengers), now preparing for first flight, and Bell.

tions are such a vital part of controlling, this procedure, which was initiated on Sept. 1, has been very effective in improving traffic control.

Through traffic over the Washington area now operates on five main airways. In the way of relieving some of this traffic, the CAA, on November 8th, swung the northeast leg of the Front Royal radio range to the northwest and the southwest leg to southeast. This change provides range guidance around the Washington station, rather than over it, for flights from the Pittsburgh area south.

Similarly, the northwest leg of the Brandywine radio range station was swung, on Nov. 3rd, to become the north leg where it now aligns with the instrument landing runway at Andrews Field. The station has been recommissioned as the Andrews range providing easier identification. During instrument weather operations, the Andrews range will be designated for exclusive military use to the 4,000-ft. level, as will the Shadyside intersection.

Of major importance to the program, the Washington radio range is being relocated from the airport area to Fort Foote, thus providing one approach path for ships into the ILS runway at Washington National, whether using the radio range or ILS approach. This will serve to simplify approach procedures.

With the installation of the Washington range at Fort Foote, the outer marker of the ILS will be decommissioned and the radio range station used instead. Three other fan markers in this area are also being decommissioned to alleviate confusion. Also, a new radio range will be installed at Tappahannock.

To insure that this program is effective and continuing, CAA and ATA have established two working groups that will meet following each period of instrument flight weather to discuss the operating results. As experience dictates, changes and refinements will be brought about to insure the best possible operation which can be provided for the crowded, four-airport capital.

National Aviation Meeting Scheduled December 16-17

The 1949 national aviation meeting being organized by the National Aeronautic Association as a successor to the National Aviation Clinics of the past six years has been scheduled for December 16 and 17 at the Statler Hotel in Washington.

General purpose will be to explore the possibilities of establishing a long-range national aviation policy and to evolve a logical means of implementing such a policy. Two luncheons and two business sessions have been planned, with one morning and one evening left open for general group and association meetings which may be planned in concurrence with the forum.

A five-man governing committee, headed by Louis E. Leverone, president of NAA, is arranging the conference.

Washington Accident Raises Question of Legal Liability

By KEITH SAUNDERS

When a P-38 collided with an Eastern Air Lines DC-4 on final approach to Washington National Airport on Tuesday morning, November 1, killing 51 passengers and the transport crew of four, the result was not only the worst commercial airline disaster in the nation's history but also one of the most baffling.

What made the collision so puzzling was the fact that visibility at the time was excellent and the P-38, piloted by Capt. Erick Rios-Bridoux, Bolivian Director of Civil Aeronautics, had been in communication with the airport control tower until seconds before the crash. He had been warned repeatedly by the traffic controller that the transport was cleared for landing ahead of him and that he should turn left and circle the field before landing.

Last week, a Civil Aeronautics Board hearing panel heard Capt. Rios' statement, taken from him in the hospital, as to the events immediately preceding the tragedy. In addition, the panel took testimony from the tower personnel, from other eyewitnesses and from official investigators.

There was every indication from the evidence that the transport was following normal let-down procedure and was not violating or deviating from regulations at the time of the collision. If the hearing panel finds this to be true, the paramount question, so far as survivors of the 55 victims are concerned, will be: who is liable?

Was Capt. Rios himself liable? Or was the Universal Air and Marine Supply Company, in whose name the plane was registered in the records of the Civil Aeronautics Administration, liable? Or was it the Bolivian government, for whom Rios supposedly was testing the plane prior to its purchase?

Virginia Jurisdiction. These were questions which probably ultimately would be decided in the courts of the Commonwealth of Virginia, over whose territory the collision occurred, and in accordance with Virginia law.

The facts appeared to be that: the Bolivian government was desirous of purchasing the surplus fighter from Universal and had made a substantial down payment but had not actually taken title to the plane. Final payment was to have been made after Capt. Rios had tested the ship and reported it to be in satisfactory condition. It was while he was testing it that the collision occurred.

If Universal should be found to have been legal owners of the P-38 at the time of the accident, and if it were found that the fighter and not the transport were responsible for the collision, Universal could be sued and it, in turn, might sue Capt. Rios.

No Agreement. On the other hand, if it were proved that the plane at the time of the accident was the property of the Bolivian government, that government could not be sued without its consent, there being at present no international agreement covering air collision between planes of different national registry.

The State Department, which would have to deal with the South American republic in the matter, has indicated it would be willing to press claims against Bolivia in the matter only (1) if Capt. Rios were found to be officially responsible for the accident and to have been officially representing his government at the time of the collision, and (2) if it were further established that families of victims had recourse against no one else.

Glamorized PBY—Painted in white with black trim and sporting the KLM Royal Dutch Airlines coat-of-arms, this is the first of five Catalina PBY flying boats converted for island-hopping passenger service by KLM in the Far East. The ship has been modified for quicker take-off and faster climb, and the interior of the fuselage has been made into a comfortable 18-passenger compartment, complete with galley and lavatory.

State Officials Cite Need For Better Personal Planes

By ERIC BRAMLEY

The need for development of improved and more useful personal aircraft, with government financial assistance through a proposed National Civil Aviation Council, and with less red tape over airworthiness certificates, was strongly expressed at the annual convention of the National Association of State Aviation Officials in New Orleans, Oct. 30-Nov. 2.

The convention, attended by over 100 persons, covered a wide range of subjects, but if any one of them stood out it was the need for a better personal aircraft—a subject that NASAO has not discussed at any great length in the past.

However, equally important was an expression of opinion from several members that ways must be found to increase the utility of present personal planes, and in this regard their use for spraying and dusting was discussed as being very promising.

One state director told us between sessions: "The Scotchman, after hunting and hunting, found a use for old, used razor blades—he shaved with them. We've got to do the same with present airplanes—we've got to fly them. It's all well and good to talk about five years from now, but there are lots of planes sitting around in hangars that ought to be flying. If we don't wear them out, the market for new ones won't be large."

Nevertheless, one of the best-received speeches at the convention was given by Grover Loening, NACA consultant, who said that a five-year moratorium on the need of airworthiness certificates by CAA "is now safely in order" and would be the best way to insure development of new, advanced personal planes. A prototype bill would be of assistance, but instead of being administered by a cumbersome government board it should offer some incentive to a designer—a large prize or the promise of a large order for a successful product, he said.

Favors Aid. Members also heard Crocker Snow, of Massachusetts, reporting for their research and development committee, favor government aid for research and development, and assert that a bill on the subject has been prepared for introduction at the next session of Congress. The bill would set up a National Civil Aviation Council, consisting of the NACA chairman, CAA Administrator and chief of Army Field Forces, "which is authorized to allocate to CAA, from funds appropriated, sums to be used for the purpose of entering into contracts or modifications thereof with an individual or company for the design, development, testing, tooling, construction, service testing, and modification of prototypes of aircraft or the improvement of existing types of aircraft."

Snow also aroused interest with his statement that although Aircraft Industries Association seems to be opposed to the idea of government aid, an NASAO survey of the industry found seven manufacturers in favor of government participation (with varying reservations as to method and details), one strongly opposed and three more or less neutral. Among those in favor were Piper and Ryan.

NASAO supported with a resolution Snow's recommendation on airworthiness certificates, urging CAB to review parts 03 and 06 of the Civil Air Regulations and substitute "simpler, more realistic and technically sound regulations, and consider replacing academic standards with proven results of actual flight tests."

If spraying and dusting activities are going to increase the present lightplane's utility, there will have to be some regulation among the states, James R. Graham, of U. S. Aviation Underwriters, warned the meeting. He said the "rate of attrition among pilots (in spraying and dusting) in the last year has been almost criminal" and that as a result insurance rates will go up next year. Inexperienced pilots are causing a lot of the trouble, he added. Some state directors said that regulations are already being introduced.

Number Surprises. Many attending the convention were surprised at the number of planes engaged in this agricultural activity. North Dakota, for example, reported 153 planes being used, South Dakota 136 and Wyoming over 100.

Discussions on airports produced little controversy at the convention, and a resolution was adopted favoring CAA's recently-announced policy of limiting federal participation to mono-directional runways. CAA was asked, however, to take into account "commitments entered between potential airport project sponsors and the governmental agencies prior to the adoption of the policy . . . CAA (should) immediately bring its operational requirements insofar as they affect air carriers and its appropriate technical standard orders into conformity with the implications of the new policy . . ."

Regarding construction of small fields, many members were concerned over the large amount of money that goes into engineering and administrative costs, and they directed their in-coming officers to study a method of permitting the grouping of several projects as a means of reducing these costs.

As the convention opened, the talk around the St. Charles Hotel was that there might be a few harsh words between NASAO and the scheduled airlines. There was a feeling among members that the Air Transport Association has been working against the agencies in some states, and they wanted an explanation from Adm. Emory S. Land, ATA president, or Robert Ramspeck, executive vice president.

Speaks for ATA. Neither could attend, but William T. Raymond, ATA's director of governmental affairs, took the floor and satisfied the audience with a statement that ATA wanted it understood "fully and completely that ATA is not opposed to state aviation agencies." Such agencies, however, should be financed from general funds and not from fuel tax revenues, he added. Both sides

NASAO Officers—James D. Ramsey (center), director of the Nebraska state aviation department, was elected president of the National Association of State Aviation Officials during the group's convention in New Orleans. Crocker Snow (left), Massachusetts, was named first vice president and Claude B. Friday (right), New York, is the new treasurer. C. A. Moore, Mississippi, and C. K. Fraught, Wyoming, were named second and third vice presidents, respectively. New regional directors are: Richard Jamison, Maryland; Dexter Martin, South Carolina; Joseph McLaughlin, Illinois; A. W. Meadows, Texas; Norbert Locke, Iowa; Warren Carey, California, and W. M. Bartlett, Oregon.

NASAO Sidelights

Comments on personalities and events at the annual convention of the National Association of State Aviation Officials:

Presidency for the next year couldn't have happened to a nicer guy than young and up-coming **Jim Ramsey**, of Nebraska . . . Last fall's elections plus other reasons resulted in some new faces at this year's meeting, chief among them **Joe McLaughlin**, who replaced **Bob Dewey** as director in Illinois, and **Wally Schanz**, who handles things in Florida now that **Bill Lazarus** is gone. **Charles Bowers** represented Arkansas, which just became a member.

Old-timer **Dex Martin** missed his first meeting in years, being busy back in South Carolina, which was ably represented by **Dabney Yarbrough** . . . Lots of other veterans present: genial **T. B. Herndon**, host deluxe for Louisiana; **Hayden Brooks** and **Asa Rountree** of Alabama; **Clarence Cornish**, Indiana; **Floyd Evans**, formerly of Michigan, now a colonel, USAF; **Bill Anderson**, Pennsylvania; **Les Schroeder**, Minnesota; **Doug Langstaff**, who runs a pretty good airport (Moisant) down New Orleans way; **Howard Rough**, CAA; **Pat Moore**, American Association of Airport Executives; **Bob Copsey**, New Jersey; **Blanche Noyes**, CAA's airmarking specialist, and many others.

Impression is that NASAO is becoming a more stable and constructive organization, a little different from the old days when it used to object to everything. Remember the fight over the Lea bill at the 1943 Aviation Clinic in Oklahoma City, when the state boys jumped on the late **Col. Ed Gorrell**, then president of the Air Transport Association? "Heck," says Bill Anderson, "we had to make a big noise then—a noise big enough to make everybody think we represented the 48 states. You know how many active members we had? Less than 10. We think our bluff worked, too." Anyway, today NASAO has 43 members and draws a planeload of CAA and CAB officials from Washington, headed by CAA Administrator **Del Rentzel** . . . It was the first time, to our knowledge, that the Post Office Dept. has been represented. Assistant Postmaster General **Paul Aiken's** speech on air star routes was well received.

Madeline Dinu, NASAO's general counsel, now engaged in private law practice in Detroit and doing very well, thank you . . . **Bob Schmidt**, who runs the Tucson Airport, will promote Tucson without even waiting for anyone to drop a hat, and he's darned good at it . . . Oil companies were around saying hello to people—**Frank Tomlinson** and **George Ash**, of Texas Co.; **Warren Baker**, of Socony-Vacuum, and **Earl Lothrop**, American Petroleum Institute . . . Link Aviation represented by **Phil Hopkins** and **Lloyd Kelly** . . . Old-timer **Bill Slee**, of Robinson Clay Products Co., talking about segmented circles . . . Only a small airline representation—**Bill Raymond**, ATA; **Woody Thomas**, TWA, and **Marshall Kochman**, Delta. NASAO would do well to extend formal invitations to all airline men dealing with state matters. Then maybe there'd be less distrust.

If you want some darned good ideas on small airports and flight strips, see **A. W. Meadows**, Texas director, and **W. M. Bartlett**, of Oregon . . . And **Frank Wiley** of Montana knows the score on using the airplane for spraying and dusting . . . **Crocker Snow**, of Massachusetts, drew the worst job at the convention—chairman of the resolutions committee.

One well-known state director commended us (unsolicited) because AMERICAN AVIATION has been the only magazine to follow NASAO consistently. For his information, we told him that we can remember conventions at least as far back as 1938 in Louisville (when **Al Near** was the perfect host) and that our publication has followed NASAO to St. Louis, Butte, Ft. Worth, Boston and numerous other points. We'll try for even bigger and better coverage in the future.

expressed a willingness to cooperate more fully in the future.

On other fronts, NASAO heard a plea from CAA Administrator Del Rentzel that the many aviation groups "stop talking about individual programs and get together on one program. We're not going to get very far in aviation unless we have one program and quit worrying about our own share of the pie."

Also, the members, who have seldom hesitated to express their opinions on any pertinent subject, had the unusual experience of having a speaker tell them frankly what he thought they should and should not do. J. B. "Doc" Hartranft, general manager of the Aircraft Owners and Pilots Association, said that AOPA does not oppose state commissions although it has opposed some of their activities. He warned them against over-regulation, asking them to "tone it down a bit" and stating that "you're barking up the wrong tree and the only thing you'll get is pilot resentment." He also warned that, through some test cases that AOPA may bring on regulations, "we may meet head on, although I hope not." And when the states get into economic regulation, "you're monkeying with a buzz-saw," he said, adding that "if your enforcement is in the direction of anything other than safety you're on questionable grounds."

Hartranft asserted that one important activity in which commissions should engage is promotion—"the finest word in the dictionary and you're shunning it. It's easy to regulate, but there's quite an art in having successful promotion. You have tools you haven't even reached for."

Two Assumptions. Loening, in his speech on personal planes, asserted that CAA airworthiness certificates grew up around two false assumptions: "that the prospective buyer knows so little about aircraft that he needs the protection of a benevolent government to keep him from making the grievous mistake of buying a death trap," and that "the constructor is so badly informed on air technique and aircraft engineering that he needs a handbook from the government to tell him how to build his aircraft."

He added that "right now is the one time in our history when we are fully justified in taking a definite 'let the buyer beware' position on personal planes and give the designers a completely free hand to make for themselves a greater and more profitable business by placing with them the complete responsibility for developing a successful aircraft or sinking of themselves completely into bankruptcy by building a poor craft . . ."

The industry today is in the curious position of having one product, the helicopter, that will take care of the zero to 80 mph range, and another, the fixed-wing plane, that will handle the range from 80 mph on up, "presently" to 200 mph, he said. However, there is no product that will cover the whole range and the "research field is wide open."

Northwest First With Bar Service On U. S. Route

Northwest Airlines last month became the first scheduled airline to serve alcoholic beverages in flight within the U. S., when NWA opened a bar in the lounges of all of its Stratocruisers. The serving of spirituous beverages has been a feature of international airline passenger service since the war, and has been a much-discussed controversy as far as domestic operations are concerned for many years.

Northwest reports a favorable reception to date, and a means of increasing its nonmail revenues. There is nothing in the Civil Air Regulations to prohibit such service aboard planes.

American Airlines before the war asked the public through newspaper ads whether it should serve drinks, but this was at a time when relatively few of the public were flying. Bar service charges on NWA are $1.00 for highballs, 75c for Manhattans and Martinis, and 25c for soft drinks. The times at which drinks may be ordered are announced by the flight attendant.

N. Y. Aviation Laws: A digest of New York State laws affecting aviation revised to include new laws passed by the 1949 legislature, is now available from the Bureau of Aviation of the State Department of Commerce at Albany. Most significant change is a complete revision of air traffic rules, with the new rules set forth verbatim in an appendix.

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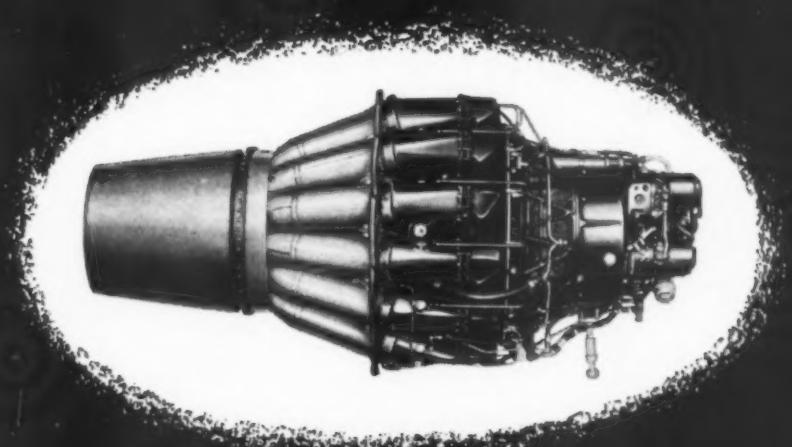

J 33-A-23 Turbo-Jet

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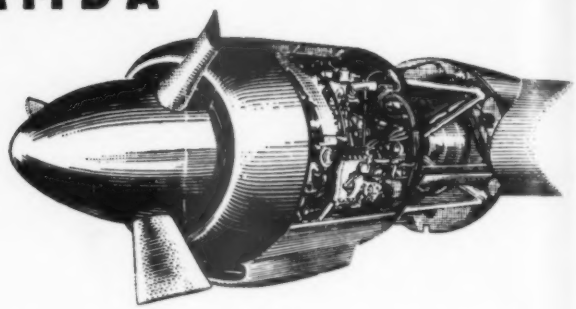
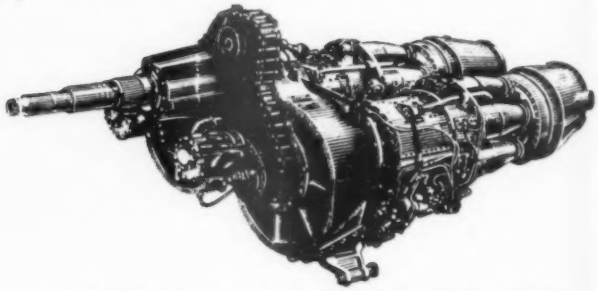


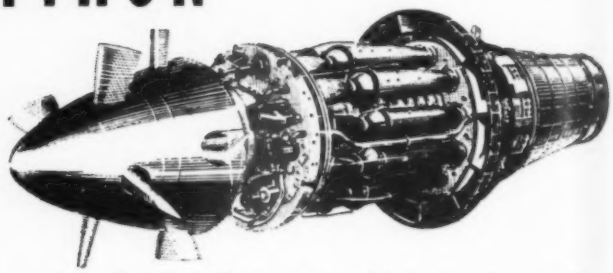
Over 8,000 hours development running and flying experience have gone into the development of the Mamba. Increased power has been achieved without any increase in weight or diameter. Completed successfully 150 hour civil and military type tests, 500 hour sealed endurance test . . . flying in five types of single and multi-engined aircraft.

DOUBLE MAMBA



The Double Mamba with independent counter-rotating props is the ideal power unit where economical cruising and high reserve of power are required . . . flying in the Fairey 17 Naval anti-submarine aircraft.

PYTHON



One of the world's most powerful aero engines—over 4,110 equivalent s.h.p.—the Python is the first prop-jet in quantity production. Passed 150 hour combined civil and military type tests August 1949 . . . flying in the new Wyvern Naval Strike Fighter August 1949.

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Six Trunks Report:

Nine-Months Results Point Toward Airline Profit Year

Record-breaking third-quarter traffic, following an exceptionally good second quarter, considerably brightened the prospects of the domestic trunk airlines for finishing out the year in the black.

Revenue and expense statements for the period are not required to be filed with the Civil Aeronautics Board until this week, but individual company statements made public during the past fortnight showed a marked trend toward profitable operations.

Of six trunklines issuing public statements, all showed a profit as of September 30 this year, whereas three had been in the red on the same date in 1948. A combined profit of $12,105,000 was reported by the six carriers for the first nine months of 1949, as against a net loss of $4,629,000 in the comparable period last year.

9 Mos. Financial Results*

(000 omitted)

Carrier	Profit or Loss 9 mos. 1949	Profit or Loss 9 mos. 1948
American ..	$5,935	—$3,416
Capital	703	92
C&S	509	449
MCA	263	81
Northwest .	1,984	—1,596
United	2,711	—239
Totals ...	$12,105	—$4,629

*Net profits and losses compiled from company statements, pending filing of official reports with the CAB.

United Air Lines, for example, reported nine-months net income of $2,710,574, as contrasted with last year's loss of $238,834 in the same period. Its traffic in the third quarter was the highest in the company's history, its operating revenues were at an all-time high and total operating expenses, as well as revenue ton mile costs and available ton mile costs, were down from last year.

Northwest Airlines converted a 1948 nine-months net loss of $1,596,000 into a 1949 net profit of $1,984,000 for the period through September 30. After a first quarter in which there was incurred a deficit of $1,482,970, NWA had six consecutive months of profits totaling $3,467,0[illegible] after taxes.

It credited increased traffic, favorable operating costs and continued rigid control of expenditures with the improved financial showing.

Capital Airlines showed a net profit of $7[illegible]3,390 for the period, as compared with $92,493 in the same period last year. Total operating revenues were up $2,890,000 to $19,945,000. The net operating profit, together with the profit from the purchase of outstanding debentures for sinking fund payments, resulted in a net profit of $1,326,000 after taxes. And this was achieved despite a drop in air mail payments of $422,000, due to the sliding-scale formula under which Capital's mail pay rate drops as the passenger load factor rises.

Chicago and Southern also was in the profit column, reporting a nine-months net of $509,286, as compared with a net of $449,427 in the same period last year. Operating revenues of $9,304,542 were up about 25% from last year.

American Airlines appeared to be the top earner for the nine-months period, with a net profit of $5,935,000 after taxes, as against a net loss of $3,416,000 for the similar period last year. Total operating revenues were $77,554,804—up 21%—and operating expenses totaled $69,149,869.

Mid-Continent Airlines had a net of $263,253 for the nine months, compared with a net of $80,842 for the like period last year. Operating revenues per plane mile were 88.40c against 86.86c in the same nine months of 1948, while costs per revenue mile declined from 84.08c last year to 81.38c this year.

Named VP-Sales—Arthur F. Kelly, for the past two years assistant to Terrell C. Drinkwater, president of Western Air Lines, has been elected vice president-sales. Kelly has been in air transportation for 15 years, 12 of which have been spent with Western. He joined the company in 1937 as regional traffic manager for Montana and Canada, and subsequently rose to general traffic manager and assistant to the president.

When final reports for the third quarter are in, it appears likely that the domestic trunklines as a group will show a substantial net profit for the first nine months of the year.

If they finish the year in the black, it will be due largely to sharp increases in non-mail revenues, rather than to any increase in mail payments, a recent study of results for the first six months of the year indicates.

The 18 trunkline carriers had a $10,649,000 operating profit through June 30 of this year, as against a $3,966,000 operating loss for the comparable 1948 half-year, yet their mail revenues as a group were down from $22,421,000 to $22,407,000. Non-mail revenues, on the other hand, were up 20%—totaling $203,044,000 in the first half of this year as compared with $168,875,000 in the same six months of last year. Seven of them actually received less mail pay this year than last.

Delta Enters Coach Field; EAL, TWA Plan Long-hauls

Three additional scheduled airline coach proposals were filed in the last week with CAB, as Delta Air Lines and Eastern Air Lines announced plans to tap the Chicago-Miami market, and Transcontinental & Western Air, Inc., filed a coast-to-coast proposal.

Delta's tariff is slated to become effective December 16, and names fares based on four cents per mile between Chicago, Cincinnati, Atlanta, Jacksonville, and Miami. Chicago-Miami fare would be $49.85 as compared to the standard one-way fare of $78.80. Service would be performed with one round-trip daily utilizing 56-passenger DC-4 aircraft. It is Delta's first aircoach proposal.

Eastern asked the Board for permission to start its new Chicago-Miami operation on December 1, thus waiving the usual 30-day advance notice requirements. Restricted to a non-stop operation, the service would also be performed with 56-passenger DC-4 equipment, but at a fare of $47.45, or $2.40 less than that announced by Delta.

The third proposal, TWA's, involved a service similar to that announced recently by American Airlines between New York and Los Angeles via Chicago. Utilizing 60-passenger DC-4s initially, TWA's fares would be $110 between New York and Los Angeles, $85 between Chicago and Los Angeles, and $35 between New York and Chicago. If CAB approves, the tariff will become effective December 27.

(Note: For over-all account of scheduled lines' coach services, see story and map on page 51).

Meteorological Requirements: The International Civil Aviation Organization, Aviation Building, 1080 University St., Montreal, Canada, has published a 61-page report entitled "Qualifications of Meteorological Personnel." The report, available at 10c per copy, does not attempt to formulate standards but simply tabulates the existing standards used by 20 contracting states.

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The Lockheed Constellation is the world's most re-ordered four-engined transport. Most of the 14 major world operators that have purchased Constellations have re-ordered this luxury airliner again and again, some as often as six times. Such repeat orders prove that Constellation customers are satisfied customers. "*The proof of the pudding is in the eating!*"

Most recent purchaser of Constellations is the Chicago & Southern Air Lines, which recently bought five Constellations. In 1949 alone, five major world airlines ordered a total of 41 new Constellations.

The dependable, profitable operation of Constellations over more than 5,000 *million* passenger miles, including nearly 20,000 Atlantic crossings, constitutes a *tried and proven* record that has created orders and re-orders. The constant world-wide demand has kept the Lockheed Constellation production line in continuous operation.

Burbank, California

Annual Engineering-Maintenance Award Planned by American Aviation

In recognition of personal achievement on the part of a scheduled airline engineer or maintenance man, American Aviation Publications will make an annual "Man of the Year Award" at the Air Transport Association's annual Engineering and Maintenance Conference, according to an announcement by Wayne W. Parrish, editor and publisher. The $100 cash award and commemorative plaque will be granted for the design of any new device, system or procedure which in use makes airline operations safer, more economical or otherwise contributes to the benefit of the industry.

Airlines will be requested to enter the names of candidates along with the entire record on which the judges will be expected to base their decisions. Names of candidates will be welcomed from individual airline employes in these departments, either in their own behalf or for another employe. Airlines will also be entitled to submit the name of service or engineering personnel of manufacturing firms that they feel deserving of consideration in the airline field.

Basic screening of entries will be made by the publisher's staff. Twenty-five entries will be selected according to originality (25%), economies experienced (25%), safety aspects (15%), applicability to other airlines (25%), and personal initiative involved in completion of the project (10%).

Following this basic selection, a five-man industry board will make the final choice. This board will include representatives of the airlines, CAA and ATA. Although the 25 selected entries will be primarily under consideration by the judges, all entries will be available for their consideration and action.

The award made at each conference will be for achievements during the previous calendar year. Thus the first award in April, 1950 will be for accomplishments during the calendar year 1949. To facilitate judging, all concerned are urged to submit their entries as soon as possible. Final date for entries will be January 31, 1950.

Oklahoman Helps Resolve Airline-Operator Differences

By WAYNE W. PARRISH

A fixed base operator in Oklahoma has started a movement to bring airlines and local operators together on a harmonious level so that both groups may work together in solving problems of mutual concern.

John Burke, owner and operator of Wiley Post Airpark, Oklahoma City, and long one of the best-known operators in the southwest, decided earlier this year that there was no sense in the continued feuding and sniping going on between the airline industry and the local operators.

So far he has conducted three successful meetings of operators and airlines and the results have been so satisfactory that fixed base operators and airline representatives in the 5th CAA Region (Kansas City) now want to join up.

It all started at the CAA's 4th Region operators' conference in Fort Worth early this year. Burke was named head of a committee to see what could be done to bring about mutual understanding and mutual respect of the airline-operators problems. On his own initiative he called his first meeting during the past summer. Airline men, accustomed to years of feuding with local operators, were skeptical. They were still a little puzzled after the first meeting but Burke's evident sincerity convinced them that the peace move wasn't phoney.

A second meeting was held in September and the third took place in Oklahoma City on Oct. 9. Six airlines and the Air Transport Association were represented at the last pow-wow and all ended up enthusiastic that much could be accomplished by the two groups working together on mutual problems.

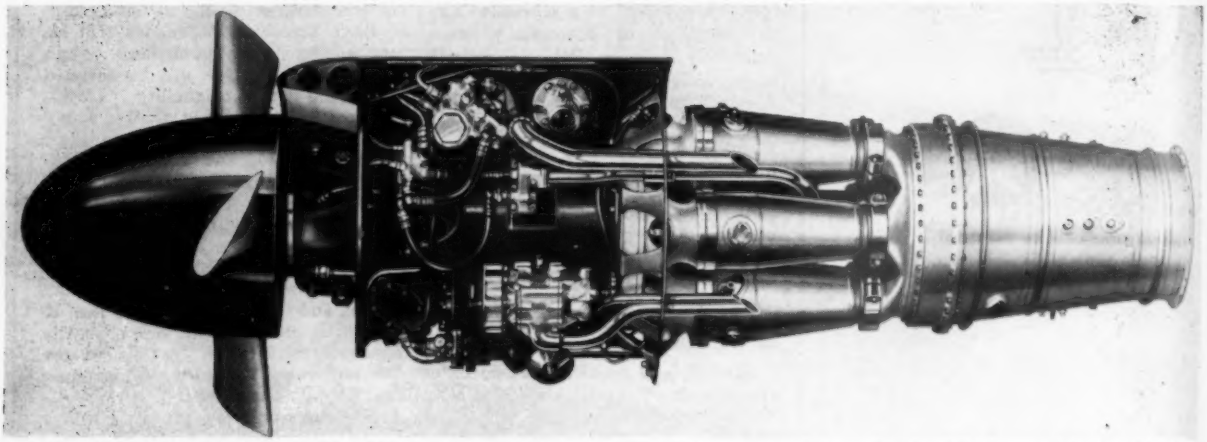
The two groups began by discussing all problems in which each had a major concern and which were not conflicting. Burke reports surprisingly few issues on which the two groups cannot get together. Legislation, airport matters, traffic control, etc., are among the matters that have been discussed.

The next big meeting will occur at the time of the 1950 4th Region operators' conference in Texas next March. Representatives from the 5th Region will participate.

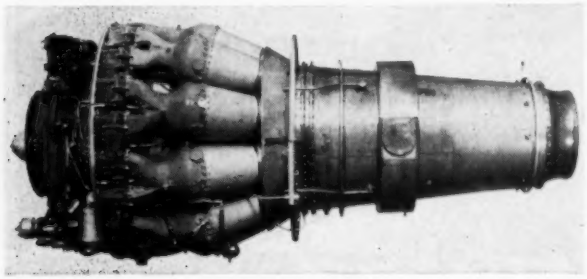
Burke has spent considerable of his own money in the harmony move. He frankly admits that before the war he could find little to agree with as far as the airlines are concerned. Since the war he's had a change of heart and decided the hatchet ought to be buried and that the two groups had much to gain and nothing to lose by playing ball together. His one-man peace movement has expanded considerably and might well become national in scope.

Britain's Commercial Jet Engines

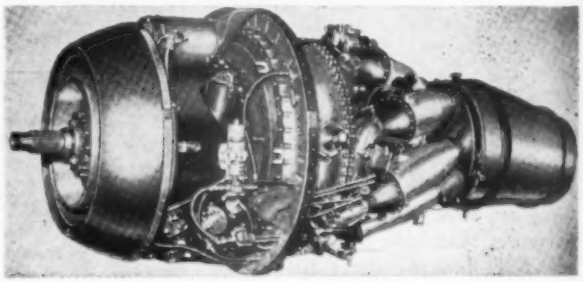
(The five engines shown on this page are the heart of the British commercial jet transport designs. Together, they power the five British and one Canadian turbine powered aircraft now operating.)



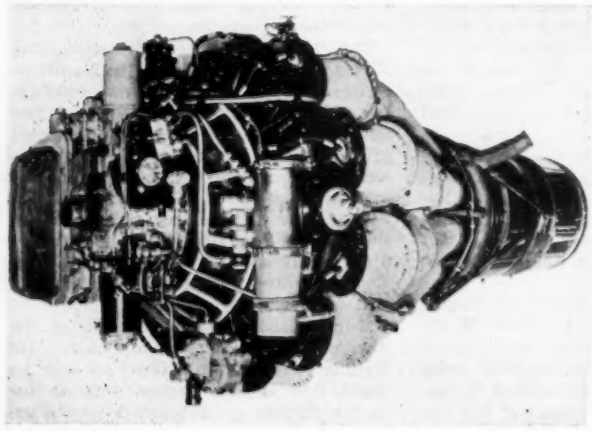
ARMSTRONG SIDDELEY MAMBA: The Mamba is an axial-flow, 10-stage turbo-prop engine developing 1010 brake horsepower plus 307 lbs. jet thrust. Its first commercial appearance is in the Armstrong Whitworth Apollo, a four-engined transport. The manufacturer is now flying a Douglas DC-3 powered by two Mambas to enable the airplane to meet ICAO requirements. The Mamba is 74" long, 29" in diameter and weighs 760 lbs., minus propeller. Fuel consumption is .89 lb./bhp/hr.



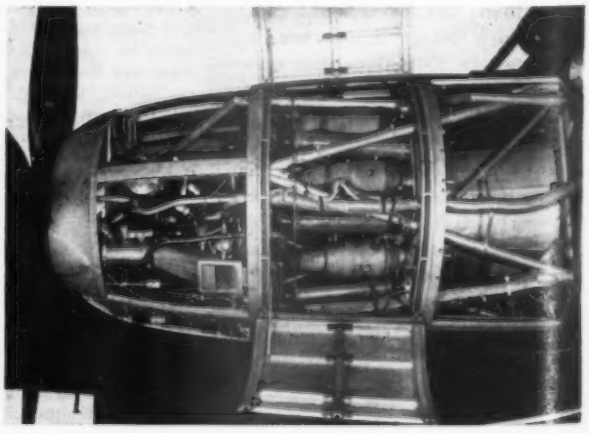
de HAVILLAND GHOST: The Ghost engine is an axial-flow, single-stage turbo-jet engine rated at 5,000 lbs. static thrust. Its 53" diameter is almost completely buried in the wings of the de Havilland Comet, Britain's 500 mph. transport. It is 115" long, has a dry weight of 2,011 lbs. and a fuel consumption at cruising of 1.13 lbs./lb.th./hr.



ROLLS-ROYCE DART: The Dart is the centrifugal flow, two stage turbo-prop engine rated at 1,000 brake horsepower plus 295 lbs. thrust. It is the power unit of the much discussed Vickers Viscount and is also scheduled for installation as a replacement engine in the Douglas DC-3's. Length is 95", diameter 38.5" and dry weight 940 lbs., minus propeller. Fuel consumption is .87 lb./bhp/hr.



ROLLS-ROYCE DERWENT: The Derwent is a centrifugal, single-stage, turbo-jet engine developing 3,600 lbs. static thrust for take-off. In addition to military applications, the Derwent is used in the Avro C-102 Jetliner of Canadian manufacture. It is 83" long, 43" in diameter and has a dry weight of 1,280 lbs. Fuel consumption is 1.45 lbs./lb.th./hr.



BRISTOL THESEUS: The Theseus is an axial-cum-centrifugal turbo-prop engine used to power the Handley Page Hermes 5, largest of Britain's turbo-prop transports. The Theseus is rated at 2,220 brake horsepower plus 825 lbs. thrust. Length of the Theseus is 82.6", diameter 54" and dry weight 2,205 lbs., minus propellers. Fuel consumption is .86 lb./bhp/hr.

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Long Flights Feature Comet Test Program

The testing of the de Havilland Comet is progressing rapidly with about 100 hours flight time already logged in the jet transport plus two important flights of long duration. The more significant of the two flights was a round-trip from London to Tripoli on October 25th in 6 hours and 36 minutes flying time. The Comet averaged 440 mph on the flight to Tripoli and 458 mph on the return trip. Flights were made at 35,000 ft. altitude with the crew using oxygen.

The airplane is reported to have used about 3,000 imperial gallons of fuel during the flight, about half of the 6,000 gallon supply provided in the wings and center section of the Comet. This amounted to a fuel consumption of two gallons per mile for all four engines including the take-off and climb values. This in turn represented about 1,000 gallons per hour. Fuel consumption of the four Ghost engines at idling is about 50 gph and during take-off about 2,400 gph.

Meanwhile additional details of the Comet's design have been released, including the dimensions. The Comet has a wing span of 115 feet, length of 93 feet and height, to tip of rudder, of 28 feet, four and one-half inches.

The passenger cabin of the Comet is provided with a main and auxiliary cabin. In the main cabin are 28 reclining seats, all facing forward, while the forward compartment, or smoking room as it is called, has eight seats in sets of four on each side of the center aisle. Tables are provided between the seats in the forward compartment.

Provisions are made for 585 cubic feet cargo storage in three compartments. Two of the cargo storage compartments are on the passenger level with one located at the rear end of the cabin and the other between the smoking room and flight deck. Each of these has a capacity of 200 cubic feet. The third compartment, located in the belly aft of the wing, has a capacity of 185 cubic feet. The upper forward cargo compartment has a maximum floor loading of 120 PSF while the other compartments, including the passenger cabin are rated for 37½ PSF loading.

Provisions for refueling at a rate of 150 gpm are incorporated along with conventional over-wing fueling. The fuel tanks in the outer wing are integral tanks while those in the centersection are of the bag type. Access to both is through plates in the bottom of the wing. Dual submerged booster pumps are used in each tank.

One of the more interesting features of the design is the antennae placement. Space is provided for MF/HF/VHF radio equipment including dual ADF's, ILS, OBR, radio altimeters, DME, Loran and intercom sets. All aerials are submerged with the main fin, insulated from the stub, and used for a high frequency antenna. VHF, ILS and ORB antennae are housed in the dielectric tips on the empennage and the medium frequency grid aerial is mounted in the nose wheel doors behind a dielectric panel. ADF loop aerials are installed in the top of the fuselage behind flush windows and the ILS glide-path antenna is behind the windshield. The ILS marker, DME and radio altimeter antennae are to be mounted in the underside of the wing root fillet.

Private Enterprise?

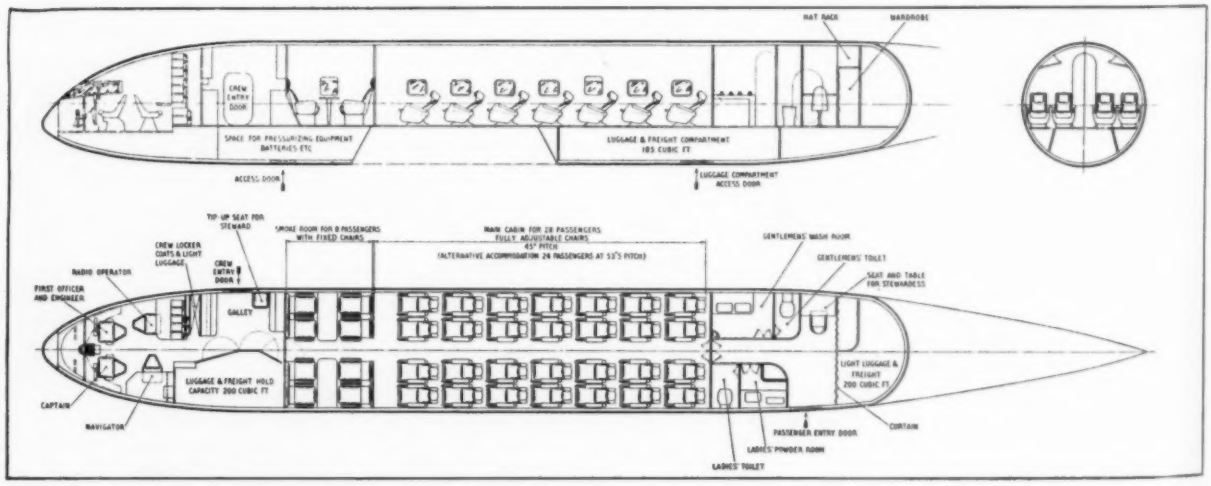
Despite reports in the trade and national press to the contrary, it is difficult to imagine the development of the de Havilland Comet as a private venture when the Ministry of Supply has donated over $18,000,000 to the project up to the present time. de Havilland is to be commended on its own initiative in design, its risk of company capital in development and the production of the Comet.

The Ministry of Supply has paid over $4,000,000 for the actual development of the Comet, to date, in addition to about $14,000,000 in the development and testing of the Ghost engines which power the Comet. The contributions toward both airframe and engine development are not yet complete.

The devalued pound decreases the dollar values involved here, but the expenditures were made during the period when the pound sterling represented about $4. This MOS contribution of working capital compares with an estimated $8,250,000 venture of private capital by de Havilland.

No matter how you phrase it, the bald fact is that a project of the stature of the de Havilland Comet is virtually impossible to undertake entirely by private enterprise, in the U. S. or in England. The implication that U. S. manufacturers are sitting back afraid to risk their own money, while a British firm in a socialized country goes ahead, is not only harmful but definitely untrue.

Maine Air Laws: The Maine Aeronautics Commission has issued a 25-page revision of the Maine statutes relating to aeronautics. Interested parties may obtain copies from the Commission's offices in Augusta.



Tentative Layout—This is the interior design planned for the de Havilland Comet, Britain's first production model jet transport. The main cabin provides for 28 passengers in seven rows of four seats each while another eight seats are provided in a smoking compartment forward of the main cabin. de Havilland has released dimensions, for the first time, showing the Comet to have a wing span of 115 feet, length of 93 feet and height of 28 feet, 4½ inches. The cargo compartments provide for 585 cubic feet storage space. Permissible floor loadings range from 37½ PSF in the passenger cabin to 120 PSF in the forward cargo hold.

CAB Briefs

Proposed tariffs of **Eastern Air Lines** and **National Airlines** designed to establish seasonal round-trip excursion fares on a permanent basis between points in Florida and points north were suspended by CAB for 90 days upon expiration of temporary tariffs on October 31.

Atlas Corporation has been granted an additional 12 months within which to dispose of all but 3% of its common and preferred stockholdings in **Northeast Airlines.** Disposal of the stock was a condition imposed by CAB in approving Atlas' control of Consolidated Vultee Aircraft Corporation.

The Board has approved, for a period of three years, a joint interlocking relationship covering Sherman M. Fairchild's status as a director of both **Pan American Airways** and **Fairchild Engine and Airplane Corporation.**

CAB has extended the authority of **Wisconsin Central Airlines** to suspend service at Racine-Kenosha, Wis., for a one-year period until October 21, 1950. Continued inadequacy of Horlick-Racine Airport was cited.

Pan American Airways was granted permission to suspend service temporarily at Marseille, France. Action followed a recent authorization granted PAA to serve Nice as a co-terminal with Marseille until March 29, 1950.

To relieve **Wisconsin Central Airlines'** "critical financial condition," the Board this month awarded the feeder a lump sum mail payment of $85,000 for the period from February 24, 1948, through July 31, 1948. The amount is in addition to $1,108,410 previously awarded the carrier for that period.

Stating that loss of its Washington-Chicago route would serve to increase its seasonal traffic variations, thereby making more difficult its ultimate attainment of self-sufficiency, **United Air Lines** has petitioned for a modification of CAB's order of investigation into "certain uneconomic competitive services" between those two points. United said it had been "arbitrarily singled out" for possible elimination or suspension of service over the route, and that such action would be "arbitrary and capricious and contrary to the public interest."

CAB CALENDAR

Nov. 28—(Docket 3397 et al.) Hearing in Transcontinental Coach Type Service Case. Tentative. Postponed from November 16.

Dec. 5—(Docket 2870 et al.) Hearing on applications of Western Air Lines and Inland Air Lines for Final Mail Rate for a past period. Tentative. Examiner James M. Varner. Postponed from November 14.

Dec. 5—(Docket 946 et al.) Hearing in New York City Area Helicopter Service Case. Tentative. Examiner Ferdinand D. Moran.

Dec. 19—(Docket 3695) Hearing on application of Florida Airways for final mail pay settlement. Tentative. Examiner R. Vernon Radcliffe. Postponed from November 14.

Jan. 4—(Docket 3500) Hearing in National Airlines Route Transfer Case. Tentative.

Jan. 9—(Docket 1705 et al.) Hearing on CAB Investigation of Accumulation, Assembly, and Distribution Tariff Rules. Tentative. Examiner Herbert K. Bryan.

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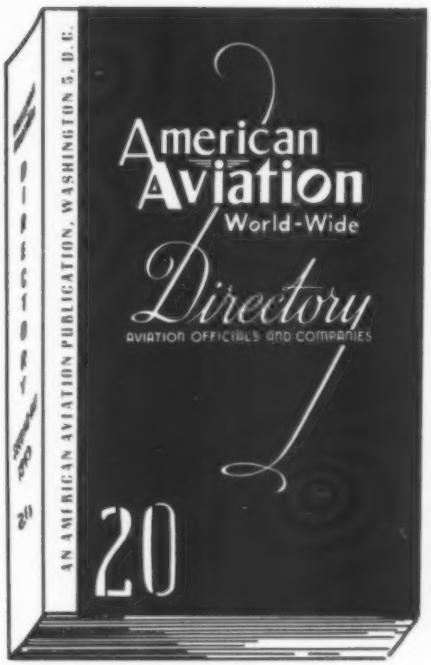

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The new Collins 17L-2 shown above is a product of this Collins project. It provides transmitting facilities on all channels reserved for aircraft communications in the vhf band.

The 17L-2 transmitter is intended as a companion equipment for either the Collins 51U vhf communication receiver, or the Collins 51R vhf navigation receiver now in almost universal use by the leading airlines of the United States.

17L-2 Specifications

Power Output: Eight watts or better into a 52 ohm load.

Modulation Capability: Up to 90% on voice from a carbon microphone or on a 1000 cps tone for MCW.

Modulation Fidelity: Within 3 db from 300 to 4000 cps. Distortion at 1000 cps, 90% modulation, less than 10%.

Stability: 0.007% under all service conditions; i.e., from 0-95% humidity; from −55 to +72 degrees C; and with supply voltage variations of ±10%.

Side Tone: Side tone output 100 milliwatts into a 500 ohm audio circuit. Side tone is derived from modulated r-f carrier providing complete check on operation.

Spurious Responses: All undesired signals radiated by the transmitter are at least 80 db below the r-f carrier.

Power Requirements: Standby, transmitter only, 1.0 amps. at 26.5 v d-c or 2.0 amps. at 13.5 v d-c. Transmitting, 7.5 amps. at 26.5 v d-c or 15.0 amps. at 13.0 v d-c.

Mechanical: The transmitter is housed in a standard ½ ATR size case (JAN A-1-d). All power and control connections are made through a rear mounted multi contact plug. Coaxial connectors for antenna and companion receiver connection are mounted on the front panel. Weight of the transmitter is 19 pounds.

We shall be glad to send you more complete information about the Collins 17L-2 transmitter on request.

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Should Federal Government Stop Aid to Small Airports?

Should the Federal government stop giving financial aid to the building of small airports and turn the job over to the states and communities? Two economists, Charles L. Dearing and Wilfred Owen, make this recommendation in the new 450-page book ("National Transportation Policy") which The Brookings Institution in Washington has just published. The book recommends that the CAA be transferred into a new Federal Department of Transportation.

The authors also have some severe things to say about light airplane design.

They believe the Federal government should continue to assist in the building of airports—but only those airports linked with interstate commerce and the national defense. They believe the Federal government ought to step aside when it comes to aiding private flying.

"It has been stated," they say, "that '. . . Federal aid highway development adopted by the Congress at the close of the last World War laid the foundation for the development of our great automobile industry,' and therefore that an airport program would have similar effect on the market for aircraft.

"Actually, however, automobiles created the demand for roads, and at the time of the passage of the first Federal-aid act for highways there were already 3.5 million motor vehicles in operation. The further contention that widespread acceptance of the airplane by the private flyer 'cannot be accomplished without a great improvement in our national system of airports' is also open to question, for the future of the private airplane is more likely to lie in its emancipation from airport facilities than its dependence on them.

"At least it can well be argued that increased airport development could hardly compensate for the current shortcomings in light plane design."

Airports vs. Research. In their conclusion in the airport chapter, the authors say: "Because of the uncertainty of personal aircraft design in the future, it appears doubtful that the Federal government should concern itself with the financing of small airports used by private planes. If Federal policy should indicate the desirability of promoting private flying, much more productive investment might be found in personal plane research, with the objective of hastening the introduction of changes in aircraft design which may reduce airport requirements for private flying."

Later on in the book the authors again plug for detaching Federal aid from local flying.

"Again, the question arises as to whether the current role of the Federal government in the development of airports reflects a proper emphasis on facilities of national interest," the book says. "The development of small airports for private flying, which for the most part serve local users, is one aspect of this question. Considerable emphasis was at one time placed on the private flyer as a national defense asset; but the expanding gulf between private flying and military aviation casts considerable doubt on this assumption now. Furthermore, the large reserve of World War II pilots has usurped the private flyer's position as the nation's potential military reserve."

More Utility Basic Lightplane Need

(Editor's Note: The following article was received as a letter from William M. Joy, former member of the Michigan Aeronautics Commission and present board chairman of the Aero Club of Michigan. As a well-known aviation veteran, his views on basic problems of the lightplane industry are well worth reading.)

I have read your October 15 editorial, the answer to Mr. Snyder, and I want to take the liberty of passing on my thoughts about the small aircraft industry.

The Air Ocean is the only medium of transportation that lies at every man's back door. When you travel by water, you follow the waterway. When you travel on land, either by rail or highway, millions of dollars of track and road are involved, and the course is seldom the shortest distance. The air, because it offers a straight course to the destination, and because it is free, may therefore be considered the most desirable choice.

Joy

But it simply hasn't been utilized properly.

I have been flying for 17 years, five of it in the Air Force, and I use my Stinson for general transportation. I don't think flying itself is essentially dangerous, but I certainly think the present day small single engine airplane has a sufficient amount of potential hazard designed and built in to make it virtually unsaleable, as your figures prove.

Any honest pilot will admit he isn't certain he can get his machine safely to earth in case of engine failure. Would you buy an automobile you couldn't control with a reasonable degree of positive action between 60 and 0 mph?

The late Henry Ford is reputed to have made a certain statement some years ago, when he had decided to quit building the Trimotor. I have been unable to verify it recently, but in essence he said he'd start building airplanes again when the ratio of dependence on the human element (80%) to the mechanical (20%) were reversed.

Intelligent Approach. Now it occurs to me that the Helioplane, or the Paraplane, or one of the other experiments we hear of these days, may well represent the first intelligent approach to the use of the Air Ocean by the small aircraft.

I am familiar with the Helioplane because I took the trouble to go to Boston to see it fly, and I came back with a couple of hundred feet of movies of this machine in action. These I have shown to numerous professional pilots, amateur pilots, novice pilots, student pilots, would-be pilots, and just plain paddle-feet. The results are invariably gasps of astonishment followed by enthusiasm.

The Helioplane is supposed to (1) be very easy to fly, (2) take off and land about 30 mph, (3) be incapable of stalling, (4) be almost noiseless, (5) offer a degree of safety not available today in any aircraft.

If these assertions prove to be facts, then it seems reasonable to believe that more people will buy airplanes because (1) sales methods and efforts will improve, (2) close-in airports will be built with economy, 400 feet being a sufficient runway, (3) complaints from residential areas will be minimized, (4) far greater utilization will be made, (5) less skill will be required, (6) the safety factor will be greatly advanced.

If ADMA intends to put its time to good use during the forthcoming convention, it seems to me that they might pursue this problem of getting an acceptable aircraft on the market. It is all very well to howl about CAA, about the many aviation organizations failing to do what's right, and about everybody's past failures. My firm belief is that the ADMA and all the rest of these outfits will find their problem solved when they have gotten together and have helped to place on the market some airplanes that can be sold because they can be used.

NWA May Get First Okay To Re-Open China Trade

Chances of Northwest Airlines resuming scheduled airline service to Shanghai, China, appear fairly bright, and NWA may become the first U. S. company to receive an official or unofficial okay from the U. S. government to do business with the new Chinese government, it has been learned. This latter government is reported to be anxious to have air service restored and to establish commercial business relations with U. S. firms.

Don King, NWA Orient manager, stayed in Shanghai some months after the new government took the city, and has been in Washington recently, conferring with State Department officials. If present efforts are successful, the way would doubtless be open for Pan American Airways to come to an agreement for resumption of operations also.

NAA Group Formulates New National Air Race Rules

In response to public demand for continuance of the National Air Races, but with increased emphasis on safety both for contestants and the public, a special technical committee of the National Aeronautic Association's Contest Board came out a fortnight ago with new rules for the races.

The committee, headed by Roger Wolfe Kahn, voted to discontinue NAA sanction for multiple-lap closed-course racing by jet-powered aircraft. This decision, however, was somewhat anticlimatical, inasmuch as the Air Force, which heretofore has provided all the planes used in such events, already had decided not to take part again.

With regard to multiple-lap, high-speed closed-course races by planes powered by reciprocating engines, numerous rules were adopted to make these safer. It was voted:

(a) that the minimum altitude for such races be increased from 200 feet to 500, and the maximum from 500 to 1,000.

(b) that a minimum of two landing strips be provided for possible emergency landings on the back stretches of the speed course.

(c) that the flight path around the speed course and areas adjoining each pylon be well policed in order to prohibit the congregation of large gatherings of people.

(d) that circling of pylons following a "cut" be *not* permitted.

Also recommended were more stringent requirements with respect to pilots' skill and physical fitness.

New Pilot Rules. All racing pilots must have a minimum of 500 solo hours, 50 of which must have been accumulated during the six months preceding the race; prior to their qualification attempts, they must each have a minimum of ten hours and five take-offs and landings in the ship they plan to race, or one of identical design, at least three hours of which must have been in the actual plane to be raced; they must satisfactorily complete a minimum of ten laps of the prescribed race course at high speed; and they each must complete a slow roll to both left and right at race speeds in the plane to be flown in the race at 5,000 feet or above, with no appreciable loss of altitude.

In addition, all pilots must submit to a complete physical examination by an aero medical surgeon the day prior to any race, with a further checkup to be made several hours preceding each race; they must wear parachutes, firmly fitted crash helmets, approved safety belts and standard service-type shoulder harness; and properly fitted G-suits and oxygen equipment are recommended.

Monoxide Tests. Under the heading of aircraft eligibility requirements, the committee voted to require the testing of all aircraft for carbon monoxide content during qualifying trials and must be equipped with operative radio receiving sets so that pilots can receive instructions from the tower. From the ground identification angle, it was decided that aircraft in the races should be painted solid colors or a satisfactory combination of colors with highly contrasting numbers painted thereon.

Another decision of the committee was that only one crosscountry race finishing at the National Air Races be permitted for any single day of the races.

There had been some suggestion that the races be dropped as a result of the accident last Labor Day in which Bill Odom's plane crashed into a home in suburban Cleveland, killing Odom and a mother and child. The Contest Board said NAA will not sanction any more such races, outside the confines of an airport, unless the communities surrounding the airport indicate a favorable endorsement of the race program.

"In the case of Cleveland," the committee said, "it must be shown that the local communities in the vicinity of the race course area do not object to a continuance of such races, in view of the more stringent safety requirements for multiple-lap high-speed pylon races hereinafter recommended."

Varied Program Arranged For NATA Convention

The National Aviation Trades Association will hold its 10th annual convention in New Orleans November 16-18, with Civil Aeronautics Administrator D. W. Rentzel as guest of honor at a dinner on the second day.

Subjects of general interest in the aviation field to be covered at the meeting will include: aircraft insurance, practices and business ethics of aerial applicators, G.I. flight training, coordination of facilities of fixed-base operators and airlines, and common objectives of NATA and the Civil Air Patrol.

CAB Extends All-Cargo Exemptions for Two Lines

Six-months extensions of temporary exemption orders permitting American Airlines and United Air Lines to operate all-cargo flights between certain points have been granted by the Civil Aeronautics Board. The carriers must file for route amendments before November 26 to qualify for the extensions.

The exemptions are in line with CAB's aim of helping passenger-carrying lines achieve greater route flexibility in all-cargo operations. A similar exemption for Capital Airlines was granted last month.

Aviation Calendar

Nov. 16-17—4th annual Indiana aviation conference, Severn Hotel, Indianapolis, Indiana.

Nov. 16-18—National Aviation Trades Association 10th annual convention, Hotel Roosevelt, New Orleans, Louisiana.

Nov. 29-30—ATA Air Traffic Conference meeting, Edgewater Beach Hotel, Chicago, Illinois.

Nov. 30—"Aviation Day" luncheon (Chicago Association of Commerce auspices), Sherman Hotel, Chicago, Illinois.

Dec. 8-11—"Wings Over the Nation" 11th annual celebration (Long Beach Jr. C. of C. auspices), Long Beach, California.

Dec. 9-10—Convertible Aircraft Congress (Auspices of Philadelphia Chapters, IAS, and American Helicopter Society), Philadelphia, Pennsylvania.

Dec. 15-16—Air Transport Association annual meeting, Carlton Hotel, Washington, D. C.

Dec. 16-17—National Aeronautic Assn. national aviation meeting, Hotel Statler, Washington, D. C.

Dec. 17—Institute of the Aeronautical Sciences 13th annual Wright Brothers lecture, U. S. Chamber of Commerce Building, Washington, D. C.

Dec. 17—Annual Wright Brothers Memorial Dinner, sponsored by Aero Club of Washington, Hotel Statler, Washington, D. C.

Jan. 9-13—SAE annual meeting and engineering display, Hotel Book-Cadillac, Detroit, Michigan.

Jan. 10-11—Florida Flying Alligator Club's "Rituals & Frolics," Melbourne, Fla.

Jan. 13-15—18th Annual All American Air Maneuvers, Miami, Florida.

Jan. 23—Institute of the Aeronautical Sciences annual Honors Night dinner, Hotel Astor, New York, N. Y.

Jan. 23-26—Institute of the Aeronautical Sciences 18th annual meeting, technical sessions, Hotel Astor, New York, N. Y.

Feb. 18-26—1950 New York Airplane Show in conjunction with National Sportsmen's and Vacation Show, Grand Central Palace, New York, N. Y.

March 6-9—American Road Builders' Ass'n annual meeting (including Airports Div.), Netherlands Plaza Hotel, Cincinnati, Ohio.

April 4-6—ATA annual engineering and maintenance conference, Hotel Continental, Kansas City, Mo.

April 10-14—American Society of Tool Engineers exposition, Convention Hall, Philadelphia, Pennsylvania.

April 16-20—American Association of Airport Executives annual meeting, Neil House Hotel, Columbus, Ohio.

April 17-19—SAE aeronautic meeting and aircraft engineering display, Hotel Statler, New York City.

June 4-9—SAE summer meeting, French Lick Springs Hotel, French Lick, Indiana.

June 10-13—National Aeronautic Association 28th annual convention, Hotel Statler, St. Louis, Mo.

International

Dec. 10—IATA COM European.

Jan. 5—ICAO Legal Committee meeting, Taormina, Italy.

Jan. 24—ICAO Council, ninth session, Montreal.

Feb. 14—ICAO Meteorological Division meeting, Paris.

Tomorrow Morning . . . South America !

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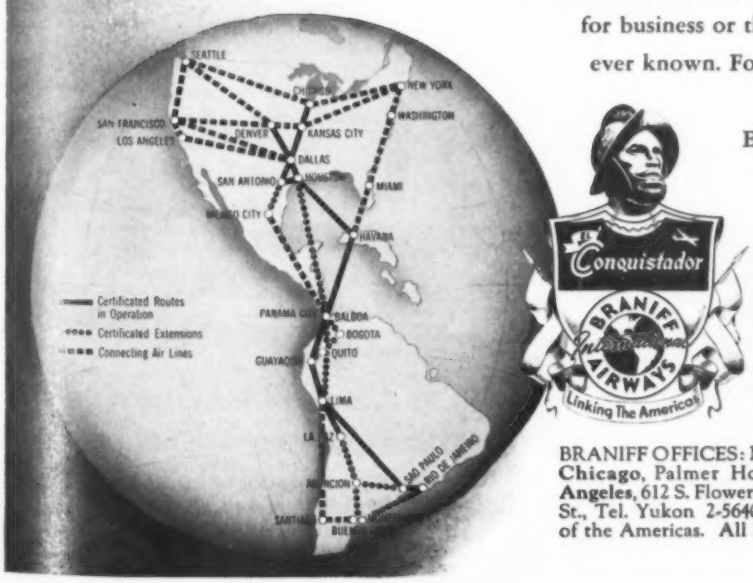
BRANIFF

EL Conquistador

When the sun comes up tomorrow, you can be half a world away . . . yet fresh as you were when you started your trip. A flight aboard El Conquistador is like that, for Braniff's great conqueror of the skies is the finest and fastest luxury plane on the Latin American skyways. You fly at 5 miles a minute in air-conditioned comfort . . . arrive refreshed, ready for business or the most glorious vacation you've ever known. For information about El Conquistador or the popular Braniff tourist flight, El Intercontinental, that saves you 25% on your air fares to South America, call Braniff or your travel agent.



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BRANIFF OFFICES: **New York**, 60 E. 42nd St., Tel. Murray Hill 7-7144; **Chicago**, Palmer House and Stevens Hotel, Tel. Fr. 2-8900; **Los Angeles**, 612 S. Flower St., Tel. Madison 9-1721; **San Francisco**, 210 Post St., Tel. Yukon 2-5640. Other Braniff offices in 42 principal cities of the Americas. All Braniff flights carry passengers, cargo and mail.

Ω OMEGA, the official Braniff timepiece.

Between the Lines

By James J. Haggerty, Jr.

Target-Seeking Rocket

An entirely new concept of aerial defense made its appearance yesterday, when the Air Force and Ryan Aeronautical Co. revealed the existence of the first air-to-air missile, the Ryan "Firebird."

The fact that the missile exists is not particularly new. It has been no great secret that both Air Force and Navy contractors have been working on air-to-air missiles of various types since early 1947. The fact that the Air Force permitted a public announcement is the news; for it is an indication that the air-to-air missile has now progressed beyond the dream stage into the realm of practicability.

The "Firebird," pictured on this page, is known officially as the XAAM-A-1, a conglomeration which denotes, to those familiar with Pentagonese, that it is an experimental, air-to-air missile, the construction of which was sponsored by the Air Force, and that this is the first such missile. It is about 10 feet long and a little more than six inches in diameter.

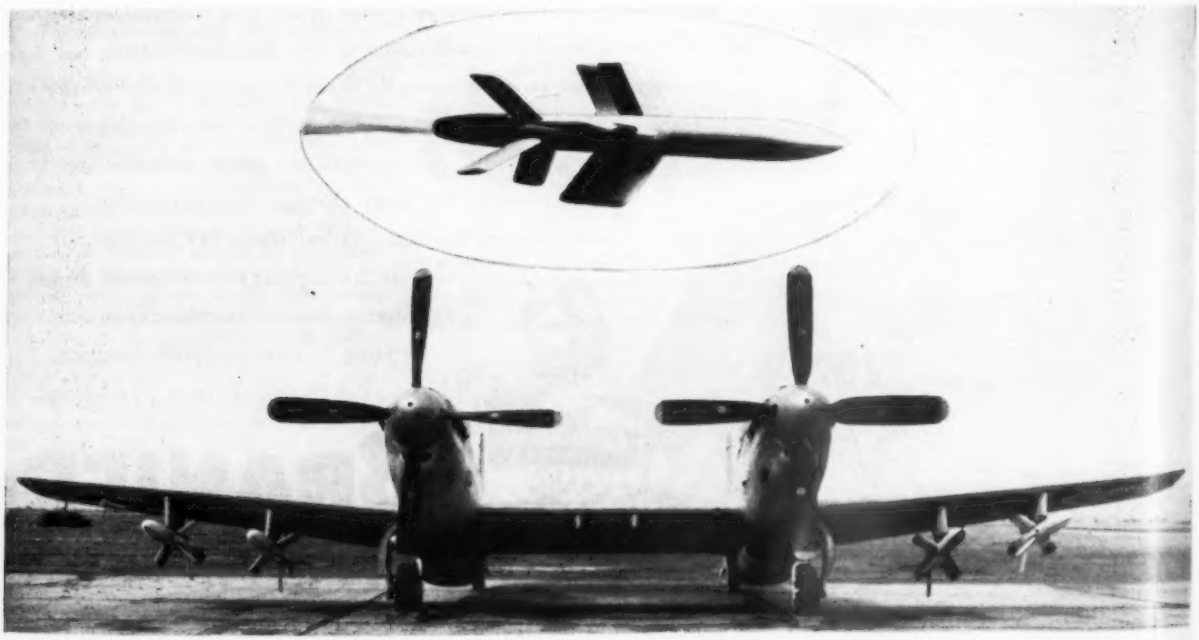
Here is how the air-to-air missile works: it is carried aloft by a "mother" plane, equipped with radar detection devices, which locates the target and directs the launching of the missile. The missile gets its initial propulsive force from a booster rocket in the tail. When the missile reaches maximum speed, the booster is jettisoned by an explosive charge, shortening the length of the missile by about two and one-half feet. For the rest of its flight to the target it is propelled by flight rockets.

On Its Own. The mother plane starts the missile off in the general direction of its target, but after that it is on its own. It does not depend for its accuracy on any sighting mechanism within the mother plane; instead it has its own "brain," a complicated radar-navigational and electronic system, details of which the Air Force is keeping quiet. The "brain" guides the missile to its target and tells it when it has arrived. The warhead in the nose of the missile is designed to explode when it comes close enough to the target to insure damage; and, as you can well imagine, the explosive charge that can be be carried in a 10-foot missile is enough to do quite a bit of damage.

It can readily be seen that the advent of the air-to-air missile is going to cause some changes in tactics. In the first place, it will tend to restore the superiority of fighter over bomber. It is now generally conceded that a high-flying bomber does have certain advantages over an attacking fighter, although these advantages are somewhat less pronounced than the protagonists of the heavy bomber would have us believe. These advantages are chiefly the jet fighter's sluggishness at extreme altitudes, giving the bomber an edge in maneuverability, and the greater range of the bomber's heavier caliber guns. An efficient air-to-air missile would nullify both of these advantages. This will occasion the development of a new defense for the bomber.

The air-to-air missile will become even more important in the still-distant day when the long-range atomic guided missile reaches maturity. Much as British pilots shot down the German V-1's in the last war, defending airmen will be able to destroy the attacking warhead in the air before it reaches its destination, the added speed and the target-seeking ability of the air-to-air missile compensating for the speed differential between the V-1 and the missile of the future.

Experimental Only. Lest we have given the impression that the Air Force now has a huge stockpile of efficient air-to-air missiles, which it has not, we should like to point out that the "Firebird" is strictly an experimental missile, the forefather of other, more efficient target-seeking rockets. It has been test



Ryan Firebird—Here is the latest in aerial defense measures—an air-to-air missile. This particular missile is the Air Force's first of the type, the Ryan XAAM-A-1 Firebird. Launched from a "mother" plane, it seeks its target by means of a radar navigational and electronic control system, exploding a warhead as it gets close enough to do some damage. The Firebird is 10 ft. long and a little more than six inches wide. Its X-shaped wings have a three-ft. span. Initial impetus is supplied by a rocket booster which drops off when the missile reaches maximum speed, after which it is propelled by flight rockets within the airframe.

flown, but only to determine the effectiveness of the propulsion system and the general aerodynamic configuration. The guiding mechanism has been tested separately, on the ground, and found "satisfactory." The "Firebird" will never be mass produced; the only purpose it has served has been to provide Air Force and industry technicians with engineering data upon which to base the design of the air-to-air missiles which will go into operational service.

However, the air-to-air missile program has not been confined to the "Firebird." There are several other AAM's in various stages of development, and apparently the day is not too distant when they will be standard weapons.

Dilbert

You have undoubtedly heard of pilots who have taken off (or tried to) with locked controls or who have landed with gear up and you have probably thought "How could they do it?"

Well, we now have the aeronautical mental lapse to end all mental lapses.

At Charleston, R. I., a group of Navy student pilots were simulating carrier take-offs, flying Douglas AD-2 Skyraiders.

Each pilot would taxi up to take-off position with his wings in the folded position used for deck or below-deck storage, then, as he moved onto the runway, lower the wings into normal flight position and take-off. Take-off distance was about 300 feet, to simulate the distance available on a carrier deck.

The control tower operator's jaw dropped as he suddenly noticed a queer-looking plane moving down the runway. It roared past the 300-ft. mark without giving any indication that it was planning to go skyward. At the 2,500-ft. mark it finally got off the runway and began to climb. It reached an altitude of 250 feet, then banked steeply left and plunged into a clump of trees.

The rescue crew reached the scene of the crash in a few minutes and extricated the pilot from the wreckage, scratched and bruised but still conscious.

"What happened?" he asked, dazedly.

"Nothing much," he was told, "You merely forgot to lower your wings."

Lockheed Discontinues Work on L-949 Connie

Lockheed Aircraft Corp. has discontinued its engineering on the L-949 version of the Constellation and the carriers that have had it under consideration have been so notified. The move means Lockheed's studies to keep improving the Constellation series will now be directed toward the current L-749 together with its subsequent conversion to compounded power in the L-849 when the Wright Cyclone 18's become available.

The L-949 never was actually announced by Lockheed, although design studies including estimated performance and economic specifications were released to prospective purchasers and at least one carrier displayed interest.

Production Spotlight

Services Procurement: The confused military procurement picture is finally shaping up although there is still some uncertainty as to just how much money the services will be permitted to spend this year. President Truman's announcement that he will withhold the $615,000,000 that would have permitted the Air Force to build to 58 groups instead of 48 helped clear the picture, although it was a blow to aircraft manufacturers looking for another year of plenty. It meant that builders of certain plane types which were "on the fence" will not get contracts at all.

This announcement left the Air Force with $1,415,000,000 for plane procurement, enough for about 1,600 planes. But there is a possibility that more than $200,000,000 will be trimmed from this figure under Defense Secretary Johnson's economy program. Although the Secretary has announced his intention of making such a cut, there now seems to be some hope in Air Force circles that he will not go through with it.

At any rate, the Air Force has finally determined a number of plane types it will buy, although the quantities have all been knocked down a trifle. They are: bombers, Convair B-36's and Boeing jet B-47's; cargo, Douglas C-124's, Boeing C-97's and Fairchild C-119's; fighters, North American F-86's and Lockheed F-94's, the latter being all-weather versions of the basic F-80 design; trainer, Convair T-29's, which are Convair-Liners modified for navigation training. There will be other types procured, but there is still some question as to which they will be. An AF announcement will soon be forthcoming.

The Navy was appropriated a total of $1,099,616,000 in cash and contract authority. Of this total, $418,000,000 is for payment of obligations previously incurred, leaving $681,616,000 for new contract authorizations. This will permit the purchase of 843 planes. However, although the President withheld no Navy money, the Defense Secretary's announced economy program will cut $203,000,000 out of the available procurement money. There seems to be less hope in Navy circles than in the Air Force that this cut will be canceled.

Navy procurement will be concentrated in two shipboard jet fighters, the Grumman F9F Panther and the McDonnell F2H Banshee. About 300 of each will be bought if the Navy is allowed to spend all of its money with, of course, a proportionately lower number if the cut goes through. The Navy is also planning to buy about 50 Chance Vought F7U tailless jet fighters. Other procurement will include small orders of Martin's P4M Mercator, a two-jet plus two piston-engine patrol bomber, Convair's P5Y turbo-prop flying boat, and a quantity of attack bombers, either Grumman AF's or Douglas AD's or both.

In addition, there are possibilities of orders for Fairchild R4Q's, Navy versions of the Air Force's C-119 Packet; Fairchild NQ basic trainers; Douglas F3D night and all-weather fighters; North American AJ attack bombers; Lockheed PO-1W early-warning radar-surveillance aircraft; and Piasecki's two helicopters, the HRP-2 and the HUP-1.

New Planes: *The Glenn L. Martin Co.'s XB-51, latest of the Air Force's jet bombers, has successfully completed its first test flight. The XB-51 is a three-jet bomber, two of the engines being mounted externally on the lower forward sides of the fuselage while the third is located internally in the rear of the fuselage. The engines are General Electric J-47's . . . Douglas' C-124 Air Force heavy transport has been rolled out of its hangar onto the pre-flight line and it is expected to be ready for first flight in about a month . . . Douglas has also completed the second model of its Super DC-3 and started test flights. The second model has a standard airline interior with 31 seats in place of the executive aircraft seating arrangement in the first model.*

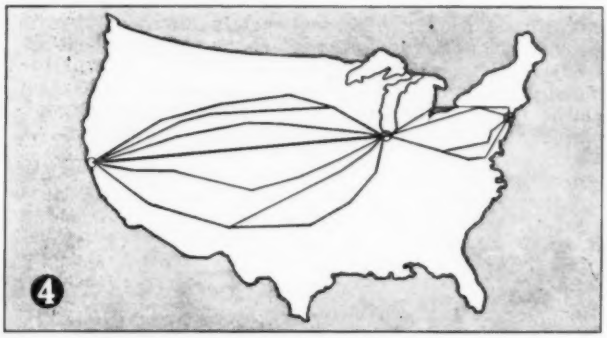
All-Weather Version: North American has developed an all-weather version of its jet F-86 fighter. The new version, the F-86D, slated for first flight in January, has the jet air intakes in the sides of the fuselage instead of in the nose, to permit installation of radar equipment. The "D" will be powered by the same power plant as the standard F-86, the General Electric J-47 . . . North American is also well along on the prototype model of its XF-93, another modification of the F-86 design. The XF-93, which will have a Pratt & Whitney J-42 (the American version of the Nene) power plant, should also fly in January.

United sets new record fo

33% improvement gives travelers
GREATER YEAR-ROUND DEPENDABILITY

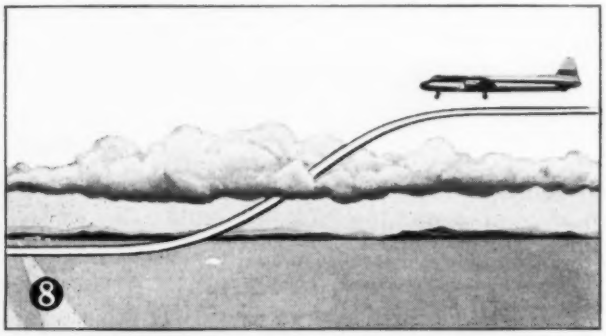
With the development of an improved technique of air transport operation, United is now giving passengers a higher standard of dependability in air travel. Its DC-6 Mainliner 300 — with the *altitude* to fly over weather and the *range* and *reserve power* to fly around it — has increased the assurance of reaching your destination on time. *We cannot expect to make a 100% record of on-time performance; no transportation system has ever been able to. But our improvement is steady — this winter our record will be better than ever before.* To see how United's technique works out, follow the pictures. ➡

TAKE-OFF TIME: When you go aboard, the sky may be overcast. But you cannot judge flying weather "by looking out of your window." Sunshine is seldom more than 15 minutes away.

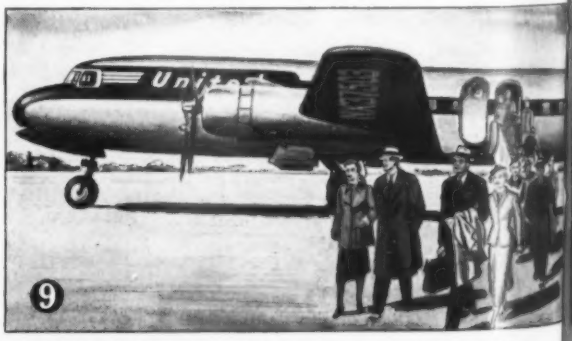


MULTIPLE ROUTES: Or your pilot may fly *around* weather. Map shows multiple routes between the East and California. Similar multiple routes to other Pacific Coast points.

AT ALL TIMES: Your captain keeps you informed of the course of your flight and other things of interest about the trip, through the plane's public address system.

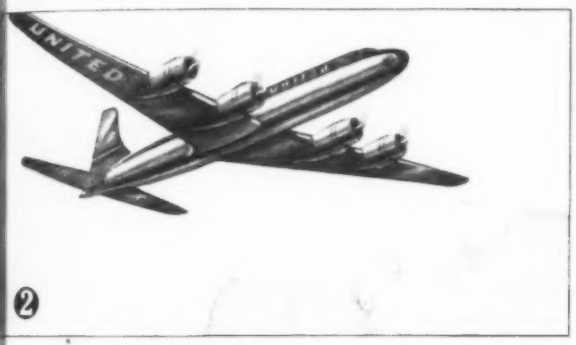


COMING IN: Electronic aids—Instrument Landing System and Precision Beam Radar—enable United to land under conditions of low visibility that formerly "closed in" airports.

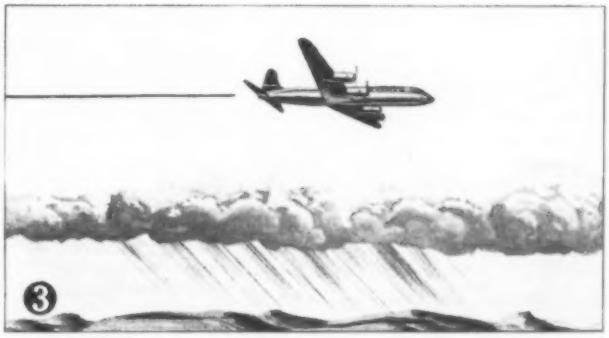


ARRIVAL ON SCHEDULE: United's on-time arrival record has been improved 33% over the previous year. And United expects to improve dependability further in the months ahead.

d for on-time performance!

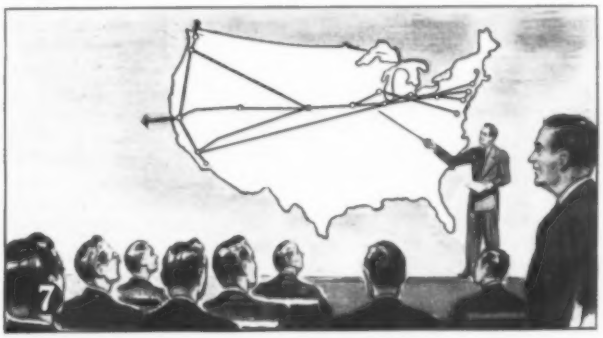


IN A FEW MINUTES: The four powerful engines of your DC-6 Mainliner 300 have carried you through the overcast into the clear, bright climate of the "sunshine level."



AN HOUR LATER: Glancing down, you may notice clusters of clouds. But United's DC-6 Mainliner 300 has the *altitude* to fly over weather in the clear upper air.

CONSTANT COMFORT: No matter how high a level you fly, pressurized cabins of the luxurious DC-6 Mainliner 300s keep the atmosphere at low-altitude comfort.



MEANWHILE: Your whole flight is being monitored at United's Operations Control Center in Denver, the "room with a 10,700-mile view" which helps keep United on time.

What does it all mean to you? Just this:

Year-round air travel is here. No longer need you forego the speed and economy of flying because weather "looks bad" to you. Now you can *FLY UNITED* with a new assurance of comfortable, dependable travel the year around.

UNITED AIR LINES

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THE NATION'S NUMBER 1 COAST-TO-COAST AIRLINE

ADMINISTRATION

Dr. Jan T. Tillisch, consultant in medicine at Mayo Clinic and the Mayo Foundation of the University of Minnesota, and a consultant in medicine to several air carriers, has been elected to the board of directors of Mid-Continent Airlines.

John B. Connally, former administrative assistant to U. S. Senator Lyndon B. Johnson (D., Tex.) and now with the law firm of Powell, Wirtz and Rauhut, and former state senator **J. A. Wirtz,** of the same firm, have been named to fill the position of general counsel for Trans-Texas Airways, a position vacated recently when former Governor **James V. Allred** was appointed federal judge in the Southern District of Texas.

Warren E. Kraemer, assistant to the general traffic and sales manager of the Latin American division of Braniff Airways since 1946, has been promoted to assistant to the vice president. He will act as advisor and consultant to Vice President **John B. Walker** in the handling of Braniff's services in Latin America.

Earl E. Jochim has been appointed as chief accountant for Bonanza Air Lines, the new Arizona-Nevada feeder airline.

J. L. Brumit, formerly assistant to the director of accounting for Trans World Airline, has been appointed as administrator of credits for the company. He joined TWA in 1940.

OPERATIONS & MAINTENANCE

D. V. O'Leary was promoted from manager of stores and inventory control for United Air Lines to director of purchasing and stores, following the resignation of **R. K. Moore** as purchasing director. He has been with UAL 21 years.

T. J. Healy has been named regional superintendent of maintenance for the eastern region of American Airlines' operations department, replacing **H. F. Brockel,** who was reassigned.

C. N. (Jimmy) James has resigned as director of safety of Western Air Lines.

Hugh B. Johnson has been appointed vice president—operations of Bonanza Air Lines. Other operations appointments announced are those of **John A. Sullivan** as superintendent of stations, and **Myron W. Reynolds** as chief pilot.

Sheilah Crew, of Santiago, Chile, has been named supervisor of cabin service for Braniff Airways' Latin American service, with headquarters in Lima.

Marvin Whitlock has been named assistant director of American Airlines' Tulsa engineering division. He has been with American since 1935 and with the aircraft and service engineering division in New York since 1939.

D. V. O'Leary
Heads UAL Purchasing

W. R. Armstrong, Jr., has been appointed to the new post of division station manager of National Airlines for the region embracing New York, Newark, Philadelphia, Baltimore, Washington, Norfolk and Richmond. He will retain his post as station manager at New York International Airport.

TRAFFIC & SALES

J. H. Cassen has been appointed to the full-time post of manager of tours and resorts for American Airlines, working under the director of passenger sales. He had previously worked with the American Express Company and the Chicago Motor Club's travel bureau.

Donn Dearing, formerly head of Braniff Airways' translation department, has been promoted to assistant to the general traffic and sales manager and consultant in Latin-American affairs. Before joining Braniff he had been with W. R. Grace & Co. and with Pan American-Grace Airways.

Marvin Whitlock
AA Engineering Veteran

Chris de Groot, who resigned several months ago from Pan American-Grace Airways, where he had been general traffic manager for nine years, has joined the executive staff of the Swedish shipping and manufacturing firm of A. Johnson & Co., with offices at 630 Fifth Avenue, New York.

Louis A. Charlot, for many years express traffic manager for the Pan American Airways system, has been appointed to the newly-created post of eastern cargo manager for Northwest Airlines. He has been connected with international shipping practically all of his business life, mostly in the steamship industry.

J. J. Medaries has been appointed manager of traffic and sales for Turner Airlines. He previously served for 12 years with Delta Air Lines, his last position there being as passenger sales manager. His assistant in charge of passenger sales for Turner will be **William H. Meranda,** formerly with Nationwide Air Transport in Miami.

Sterling Nelson, formerly city traffic and sales manager for United Air Lines at Hartford, has transferred to Los Angeles as traffic representative in the mercantile field in that area, succeeding **Carl Murray,** resigned.

L. J. Cunningham has been named Western Air Lines' station manager for Ontario, Calif. His previous post as station manager at Helena will be filled by **D. G. McMahon,** formerly senior station agent at San Diego.

Howard Jennings has been promoted from transportation agent to city air freight agent for Trans World Airline in New York.

George Corey, who used to be with American Airlines in Mexico City, has opened up his own travel bureau at Paseo de Reforma No. 1, Mexico City.

Robert B. Minogue, district traffic manager for Northwest Airlines in Washington since 1946, has been transferred to Minneapolis in the same capacity.

Joe Morris, who has been with Trans World Airline in San Francisco since 1939, has been named agency sales manager for San Francisco and the peninsula. **Dan Dietrich** has returned to TWA as Pacific Northwest agency sales manager after three years as operator of a San Francisco bay cruise.

Robert K. Vernon, formerly of Western Air Lines' sales office in Los Angeles, has been named sales representative for the new tri-county area WAL is serving since inauguration of service into Ontario, Calif.

Michael J. Wardell has been named regional director of public relations for American Airlines' eastern region. **Jay Crum,** formerly assigned to public rela-

tions for the southern region, has moved to Los Angeles as western region public relations representative.

Don Kambe has been promoted from city ticket office manager to sales representative covering all aviation and automotive industry accounts for Trans World Airline in the Los Angeles area. **John Drew**, former Los Angeles reservations supervisor, takes Kambe's old post.

A. S. Aldridge has been promoted from domestic agency and interline manager for Braniff Airways to manager of the west coast area. He has been in commercial aviation 18 years and has been with Braniff since 1939 except for wartime service with the Air Transport Command.

Aldridge

Paul Einhorn of Rio de Janeiro has been appointed publicity director for Braniff Airways in Brazil. He was public relations representative for Panair do Brasil from 1930 to 1949 and before that was co-owner of a Brazilian travel bureau.

Freeburg Named Operations Executive For Northwest

M. B. "Mal" Freeburg has been promoted from manager of flight operations to the newly-created position of operations executive for Northwest Airlines. He is in charge of the flight operations, station and cabin service divisions, and also will handle other departmental executive functions.

Freeburg has been with Northwest since 1928, and holds the distinction of being the first U. S. pilot to receive the Congressional Air Medal of Honor.

W. F. Richmond, formerly system chief pilot, has succeeded Freeburg as manager of flight operations, and J. E. Kimm has moved up to the chief pilot's post.

Others in the News

Samuel P. Crago has been promoted to assistant factory manager of Hamilton Standard division of United Aircraft Corporation at East Hartford, succeeding **Nevin F. Decker**, who resigned due to ill health. Crago has had wide experience in aviation, having been a Pan American Airways pilot before joining United Aircraft. He will continue to serve as materials manager in the production department in addition to his new duties.

Ronald S. Gall has been appointed public relations manager of the Propeller Division of the Curtiss-Wright Corporation. He has held numerous aviation public relations positions over a period of nearly 20 years.

Airline Commentary

By ERIC BRAMLEY

WE STILL get mail about airline trip insurance. Latest is a letter from Al Dallas, the director of the Air Transport Association's engineering division, who certainly qualifies as a VET (very experienced traveler). And he has some pertinent questions. "Each time I use airline trip insurance I wonder if I am covered," says Al. "Without reading all of the fine print (and who has time) the following questions enter my mind: (1) Is it necessary for me to have a return trip ticket with confirmed space in order to be covered by checking the little box on the form marked 'return,' or is it only necessary that I buy a round-trip ticket? (2) Is there any time limitation on the effectiveness of the round-trip privilege? (3) Suppose I do not have time to mail the beneficiary form. Can I rely on the insurance company to take the necessary steps in case of accident?" We can answer the last one, Al. William M. Churchill, of Associated Aviation Underwriters, which installs and operates the machines, wrote us some time ago that because the machine retains a copy of the policy "there is really no reason for the original policy to be mailed at all except as a precautionary check against the possibility that we will make a mistake." As for the first two questions, we'd sorta like to have the answers too.

•

Capt. "Pop" Sterling flew his last trip for United Air Lines in July, 1946, and was one of the first pilots to retire after UAL put in its pension plan for employes. Pop, who started with Stout Airlines and became a UAL pilot when the latter absorbed Stout in 1927, hadn't been in an airplane since his retirement—until one day recently. Now living in Long Beach, he flew home from a visit in Los Angeles, and his ticket cost 63¢. Reason is that UAL has a 25% rate for employes having five years or more with the company. Pop had 20 years and as a retired employe had the same privilege. The regular Los Angeles-Long Beach fare is $2.50, and at 25% of this figure he could fly back to Long Beach cheaper than going by the interurban. At that price maybe Pop will become a commuter.

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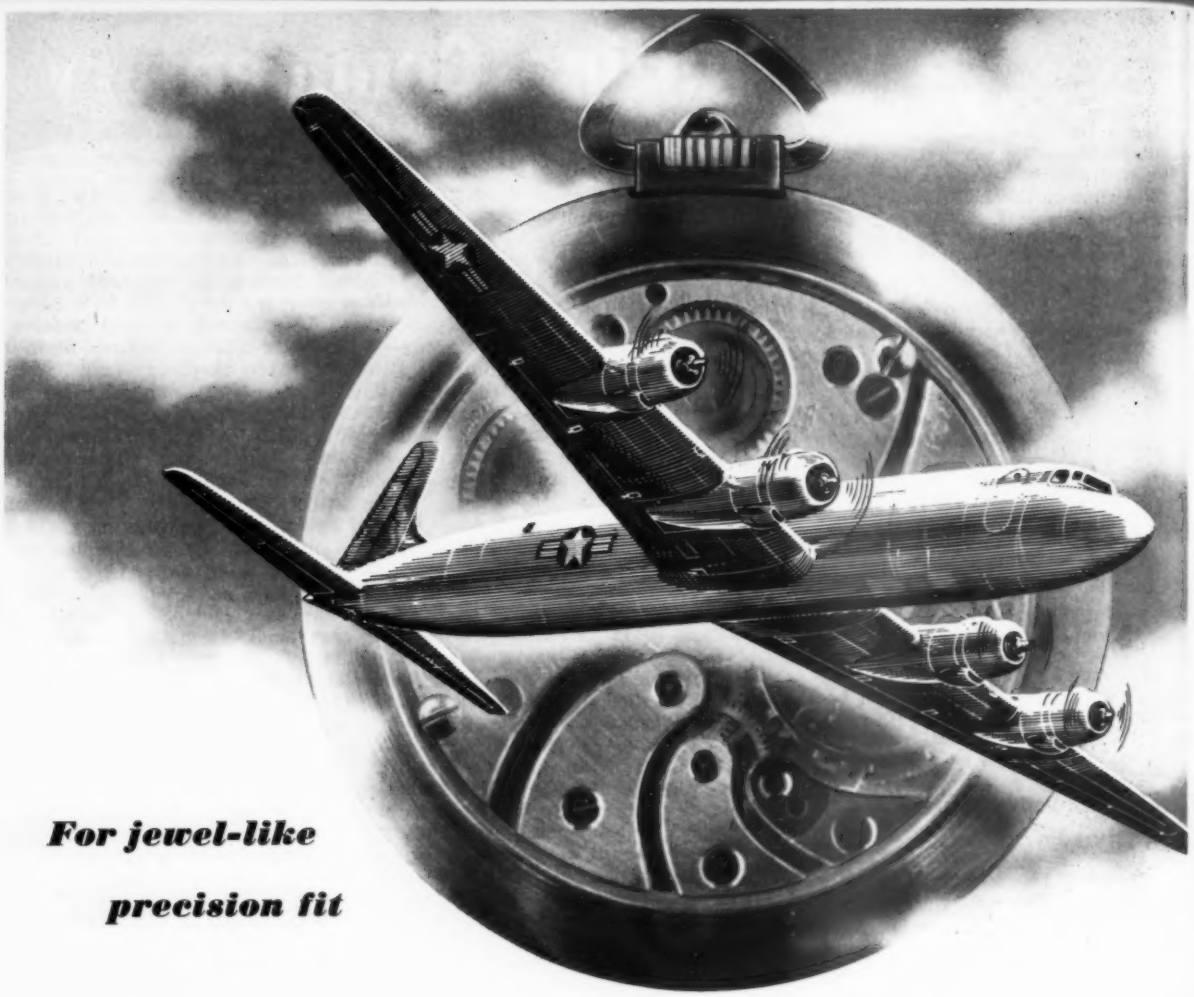
Well, there *is* something new in the airline business, and, boy, it sounds like it has possibilities. Bob Six, president of Continental Air Lines, has, as an employe relations move, cut some of the airline's workers in on the oil well business. Bob, who is an independent producer with wells in Wyoming and Utah, turned over ownership of a potential-producer well in Wyoming to a group of Continental pilots, clerks and department heads. Cost of drilling was underwritten by the employes, with one-half of one percent ownership parcelled out for each $250 invested. Receipts from the first producer were to be reinvested in the drilling of four additional wells on property owned and leased by Six. Only a week after the underwriting, the well "came in" with about 50 barrels a day of highest grade crude. So now these lucky employes are looking forward to drilling of the four remaining wells, and eventual profits. Who knows, it might get to the place where they'll resign, sit on their back porches and just wait for the checks to come in. Six, incidentally, seems to have that certain touch with oil wells. On the last one, he started drilling despite objections from his partners, James Stewart, movie star, and Johnny Meyer (remember him?) of Hughes Tool. In it came, with potential capacity of 800 barrels a day. That's a nice touch to have.

•

Among the flight crews: A significant statement by Co-pilot Farnsworth of Delta Air Lines: "I'm glad the world isn't flat, because then we couldn't have round trips" . . . Note to Capt. Bernie Southworth, of TWA: thanks much for that amusing letter, Bernie, but if we print it you'll have a certain airline on your neck. . . . A passenger kissed his wife goodbye and took his seat aboard a Northwest Airlines 202. He was somewhat perplexed when the stewardess' hand, holding a piece of Kleenex, intruded between his nose and his newspaper. "Your face," explained Stewardess Betty Palmer, offering the tissue, "is covered with lipstick". . . . A Capital stewardess was startled recently when a passenger asked for an "extension." Seems that the man was a little on the stout side, and his safety belt lacked a few inches of meeting. Her plight was solved when a good-natured priest in the next seat said: "Don't worry, mister, if we hit a bump you couldn't get out anyway."



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New Cargo Category Proposed:

Industry Groups Oppose Certain ICAO Standards

Last month the Aircraft Industries Association voiced some official complaints about the manner in which the Air Coordinating Committee is handling U. S. participation in international aviation affairs. "Certain basic principles should be established and agreed upon before the United States enters into any further discussions with other nations on detailed airworthiness or operational standards . . .," said AIA's technical director, I. C. Peterson.

In his letter, addressed to ACC Chairman Charles O. Cary, Peterson elaborated on AIA's thinking in this matter and also introduced some constructive thinking on the future of the air cargo industry as related to ICAO functions.

AIA is in favor of establishing an air cargo category in ICAO standards which would supply "some measure of relief . . . through modified application of the civil air regulations, which are unduly severe and irrational when applied to strictly cargo operations, if such operations are to be developed to their full strength."

This recommendation, which is also proposed for adoption domestically by the CAB, would provide that transport aircraft engaged in cargo operations be permitted a flat 5% increase in maximum operating weights. This would, according to Peterson, amount to about a 20% increase in payload, and permit an increase in cargo volume by providing lower unit cost for air shipments.

Level-of-Safety. Acknowledging that a flat 5% increase in maximum operating weights will not provide the same level of safety in all transport types, Peterson urges that "the approximation is within the accuracy of design criteria" and that the heavier cargo aircraft would operate at lower speeds, except during take-off and landing, thus reducing structural loads.

This approach, rather than establishment of a separate code of structural requirements for cargo aircraft, is considered advisable "because of the somewhat arbitrary basis for the existing transport requirements . . . which admit a certain risk of probability of accident which is not known precisely, and therefore any detail modifications to these requirements would be extremely difficult."

Use of the 5% increase, Peterson claims, eliminates a host of little arguments and technical inconsistencies, renders a uniform risk over practically the entire structure, minimizes detail changes and thus provides a greater net benefit to the cargo carrier and reduces engineering and manufacturing work and related costs.

Fewer Standards. While recommending the establishment of an air cargo category, AIA urged that, for multi-engine transports, only one airworthiness category be established. This compares with four categories originally considered by ICAO and three still under consideration. While ICAO would vary airworthiness standards to suit the type of operation involved, AIA claims that this method is unsound. Lower levels of safety, below the one airworthiness category, should "be accomplished by appropriate adjustments to the ICAO operations standards."

"Once an airplane is designed and built, its payload, and therefore its economy of operation can be varied to fall within whatever permissible operational limits ICAO might prescribe for a given route. The solution to the problem of categories is thus principally one of operations and not airworthiness," wrote Peterson.

Since it is not possible to "disassociate flying safety from economy of operation . . . the particular level-of-safety that can be provided a given community is determined by the type of operation that is found economically feasible. Level of safety, therefore, is not a uniform standard but rather a balance between the tolerable passenger risk and the economic feasibility of a given type of operation possessing that risk."

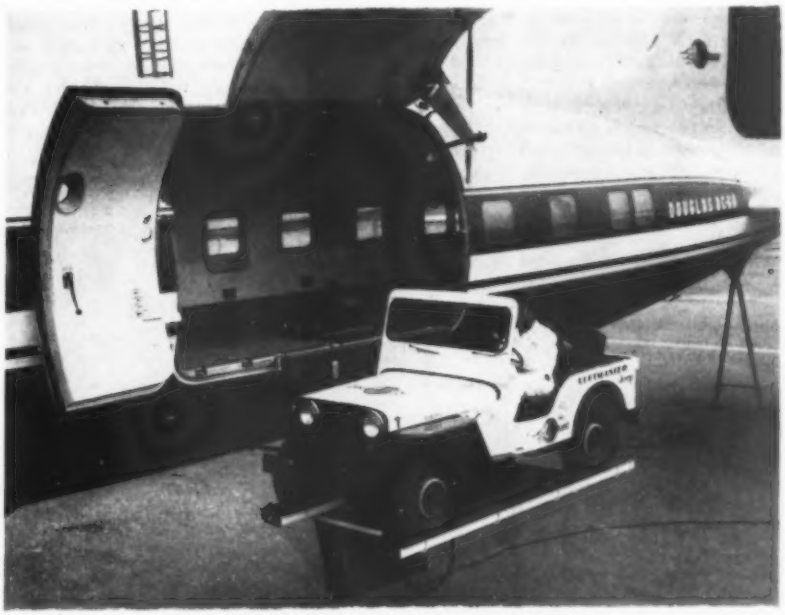
AIA concluded that unless the states' regulating authorities are willing to accept different levels of operational safety, "there can be no satisfactory solution."

ICAO Regulation Inadvisable. While the principal topic of AIA's complaint dealt with transport aircraft, personal airplanes were also involved. They say that single-engined aircraft, which under existing recommendations would be governed by airworthiness standards as Category D, should not come under special international regulations.

Both single-engined aircraft and twin-engined aircraft with no single engine performance should only be governed by domestic airworthiness standards and agreements should be reached to insure that ICAO member states would recognize CAA's certificate of airworthiness as "valid for purposes of international navigation for hire."

Basis for the recommendation is that practically 90% of the aircraft in this category are used in personal operation and existence of such rules, with which the manufacturers would feel obliged to comply, would prove a handicap imposed on a large group for the benefit of a very small segment.

More Objections. The Aviation Advisory Panel of ACC had earlier complained to ACC that Annex 8, the ICAO



Going Up—Two major features of the Douglas DC-6A Liftmaster are shown in this photo in which the jeep is being raised into the cabin. Note the extra large (78 x 124 inches) door which opens in two parts and the self contained electrically operated lift which has a capacity of 4,000 lbs. The rear half of the main door, which opens upward, is hydraulically operated. The hoist picks itself up by its own "boot straps" and is raised into the airplane with minimum effort.

annex dealing with Airworthiness Standards, showed a serious lack of planning and questioned if it was within the scope of ICAO's functions to establish such standards. In reply ACC cited its authority to deal in such matters and stated that the appropriate government agencies had "spared no effort" in assuring adequate consultation with appropriate representatives in the industry to insure that the recommendations reflected acceptable standards.

Unlike the AIA paper, the Aviation Advisory Panel's complaint touched on most of the present day annexes which have been adopted by ICAO with the U. S. consenting. The panel charged that annex 1, relating to "personnel licensing," is a "classic example of unnecessary ICAO regulation" which "should be rescinded." In answer to this charge ACC replied that this ICAO annex is substantially the United States' own national requirements and these have necessitated the most drastic changes by other countries.

Of Annex 2, relating to rules of the air, the panel claimed that "complete confusion exists . . . clarification and simplification of ICAO requirements are absolutely necessary." In direct contradiction of this attitude, ACC stated that these rules are essentially the same as the provisions of CAR Part 60 and that with one exception (France) a pilot of U. S. could fly in accordance with Part 60 and never violate the rules of any ICAO member state.

ACC Reaction. There appears to be very little indication that ACC will make any changes in its present policies to reflect the objections of commercial and private groups. In its position of reflecting military, commercial and political pressures, the Air Coordinating Committee appears bound to accept some choices which do not coincide with industry demands.

To the AAP charge that "the U. S. will have to retract some of these (annexes) which are already made effective," ACC Chairman Joseph J. O'Connell, Jr., replied, "We find it difficult to determine precisely from what injury—real or anticipated—the industry pleads relief."

Six Basic Helicopter Patents Granted to Hiller

Six new basic helicopter patents covering 35 claims have been granted by the Patent Office to Stanley Hiller, Jr., president of United Helicopters, Inc., of Palo Alto, California.

Four cover the co-axial design helicopter while the other two are for jet torque control and a direct control system now featured in the Hiller 360. This control system, called "Rotor-Matic" by Hiller, provides basic stability for the Hiller-designed helicopter.

The patents are based on claims Hiller filed in 1944, 1946 and 1947.

New Shock Mounts Reduce Vibration in Super DC-3

New-type soft shock mounts employed in the dynamic suspension of the Wright Cyclone 9HE engines in the Douglas Super DC-3 are effectively contributing to improved isolation of the vibratory forces from the structure of the plane.

Power plant installation represents one of the more extensive of the modifications which mark the conversion of the DC-3 into the faster, modernized Super, and experience with the prototype indicates Douglas has achieved an appreciable lowering of cabin noise level and a quite substantial reduction in vibration. The latter is particularly noticeable from a passenger seat in a flight in the Super.

Eight of the considerably larger Lord shock mounts are used with each engine. They have about twice the quantity of rubber as compared to the old DC-3 isolators. This coupled with the use of very much softer rubber, which tunes to a lower natural frequency in contrast with the higher frequencies of the engines, provides a noticeable improvement in isolation at operating ranges.

No actual studies on the amount of reduction in vibration have as yet been made and the 9HE power plant also is regarded as representing a better balancing job than any of the previous engines in Wright's 1920 series, but rough estimates of engineers are that it will possibly reach 20%.

Revisions in the power plant installations made by Douglas in improving the Super's performance range throughout almost all of the nacelle and little resemblance to the DC-3 is left. Engine cowling has been redesigned and the new cowl flaps are electrically driven. For the Wright engines, the cowling is fixed-type detached from the engines.

Ejector exhaust stacks exist into four outlets, three taking two cylinders each and the fourth one taking the remaining three of the 9HE's nine cylinders. Discharge is on the outboard side. An under-cowl ram-type carburetor air intake scoop is another of the pronounced modifications of engine accessories.

For conversion to P & W R-2000's, which are optional for the Super DC-3, the DC-4 installation design, with some alteration, is followed.

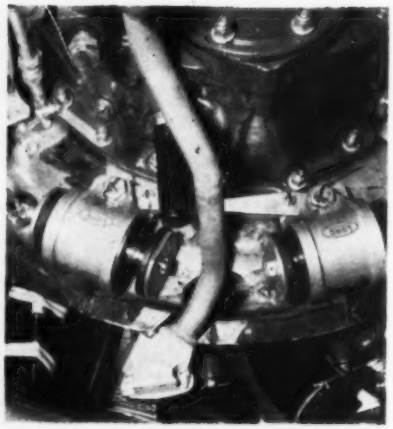


PHOTO illustrates use of new and larger Lord shock mounts containing soft rubber tuned to lower natural frequency with Wright Cyclone 9HE engines in Super DC-3. This is first commercial use of the new-type soft shock mounts to reduce vibration.

ATA Revises Aircraft Data Comparison Standards

ATA has revised its paper entitled "Method for Presentation of Data for Proposed Aircraft." This is a standard method of presenting aircraft data to compare one aircraft with another and has become a widely recognized standard in the U. S. and abroad.

The changes included in the revised edition include compensation factors for effect of propeller reversals, runway gradient, temperature accountability, etc. These are included in the performance analysis and operational analysis sections of the report.

Equations used in computing direct operating cost data have also been modified to give airplane costs in terms of cost per mile rather than cost per ton mile. The new methods fit the equations used in CAB's system of accounts.

Copies of the 25-page operational analysis section including direct operating cost data formulae, have been printed separately from the report as a whole. Copies of the entire report or of this one section are available from the engineering division of ATA on written request from company officials.

Standards Bureau Offers Student Internships

The National Bureau of Standards has announced a program of physical science internships for outstanding students in science and engineering to broaden their undergraduate or graduate training through vacation time employment and graduate fellowships. The NBS is responsible for fundamental research in physics, mathematics, chemistry and engineering and is engaged in an extensive continuing program in all phases of these fields.

The present offer involves three programs of interest to college and university students: the internship program for undergraduates, the regular training program for college graduates on the staff, and the fellowship program for graduates engaged in working for advanced degrees. Information regarding qualifications for appointment may be obtained from the Personnel Division, National Bureau of Standards, Washington 25, D. C.

PAA & NWA Use Onan Powerhouse for Boeing 377

In recent months Northwest Airlines and Pan American Airways took delivery on a total of 25 Onan Ground Power Units. These mobile powerhouses will be used by the airlines at their bases at home and abroad. They are usable for most present-day transport power requirements but were primarily designed for the Boeing Stratocruiser.

Unlike the 2100-watt units used by the airlines until recent years, the D. W. Onan & Sons designed and engineered unit for the Stratocruiser is a 65,000-watt unit. It not only fills the electrical needs of the Stratocruiser while the ship is on the ground, but it also supplies compressed air for tire inflation, accumulators, etc.; CO_2 for the truck, airplane and general utility; floodlights for night operations, etc.

Instead of two 12-volt batteries connected in series and mounted on a small hand drawn cart, the Onan unit houses a 50,000-watt DC generator and a 15,000-watt AC unit enclosed in the 22-foot long body mounted on a 2½ ton Dodge truck. A 12-cable connector carries the power from the truck through a giant Cannon plug connector mounted in the fuselage of the 377.

The Need. Is all this necessary? To realize the importance of such a high capacity unit it is first necessary to review the important part played by the electrical system in the airplane's operation. Electricity does over 100 separate jobs on the Stratocruiser. There's over a ton of generating and distributing equipment in the Stratocruiser, 119 electric motors, 482 switches, 25 miles of wire and hundreds of relays. In flight, the electrical needs are supplied by six engine-driven generators developing 9,000 watts each plus two 11,000 voltamp alternators.

It takes 1750 amps to start one of the Stratocruiser's P&W R-4360 engines and during normal operations 1440 amps are required. Surge loads may demand 2800 amps momentarily. While ground loads generally run less than flight requirements, the potential loads are present and a functional unit must be able to meet them. Maintenance checks call for a dependable power supply.

50,000 Watts. Mounted in the Dodge's 9′ x 7′ x 22′ body is a six-cylinder Hercules gasoline engine developing 140 horsepower. This motor, which has its own 50-gallon fuel supply, is directly connected to the 50,000 watt DC generator, manufactured by Hertner Electric Co., Cleveland, Ohio. This generator is a shunt interpole type, excited by an AC generator. Output of the unit is 1750 amps at 28.5 volts.

Five connecting V belts from the Hertner generator drive a 15,000-watt, voltage-regulated, AC generator (manufactured by Onan) which supplies 60-cycle 120/208 volts power. Twin pairs of double doors on each side of the truck body provide ready access to all the units.

All controls and instruments are grouped inside the truck body behind the twin doors. On the main panel are AC voltammeter, DC voltammeter, running time meter, frequency meter, battery ammeter for the Hercules engine starting batteries, air pressure gage, engine temperature and oil pressure gages, start and stop controls, circuit breakers for the DC generator and AC generator and electric motor for the air compressor. All circuit breakers are combination breakers and switches. The panel is lighted by two 12-volt DC lights operating off the starting batteries.

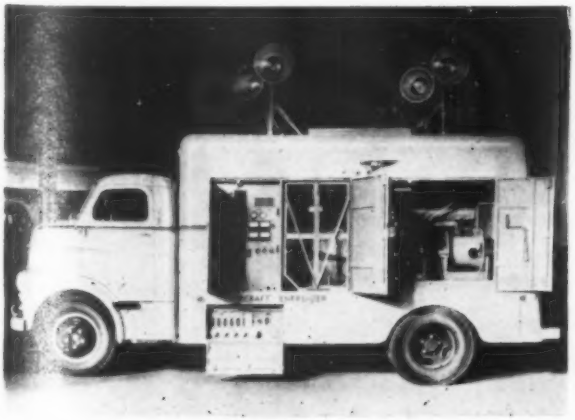
Fire Extinguishing. The lower panel, containing the fire extinguisher release handles, AC output connectors and DC output for 28.5 volts, is lit by a single 12-volt DC light.

The Walter Kidde fire extinguishing system provided in the Onan Ground Power Unit consists of seven cylinders connected so that they provide protection for the truck body and associated electrical equipment, the aircraft and for general utility purposes around the truck. The truck itself is protected by a single cylinder which discharges inside the truck through three nozzles on the ceiling proper. Operating the fire extinguisher controls on the control panel also stops the engine operation, automatically discontinuing power output.

Three of the cylinders in this Walter Kidde system are used to supplement the regular system in the Boeing Stratocruiser. A 75-foot flexible hose connects the cylinder manifold with the aircraft's regular extinguishing system. In the event of a fire on the aircraft during ground operations, this arrangement will generally handle the emergency and obviate the need for replacing the aircraft's CO_2 cylinders.

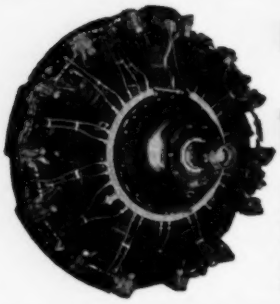
The remaining three cylinders are connected to a 50-foot hose for use in fighting general fires which might break out around the airplane or on the ramp area during servicing operations. In addition to the CO_2 provisions, there are also two Pyrene extinguishers provided on the inside of the truck body doors which are always open during energizer operation.

Auxiliary Equipment. For emergency lighting at night, where other provisions



THIS Onan ground power unit is used to supply AC and DC power for [illegible] Stratocruisers while the airplanes are on the ground. Auxiliary services provided by the Onan unit include general fire protection and compressed air for pneumatic tool operation and general servicing. A total of twenty-five of these units have been ordered by Northwest Airlines and Pan American.

WHEN in use, the ground power unit, which is mounted on a 2½-ton Dodge truck, is brought alongside the airplane and a 12-cable connector is used to connect the ground power supply to the ship's bus system. The arrangement of the Kidde fire extinguishing system enables part of the CO-2 supply to supplement the ship's system.



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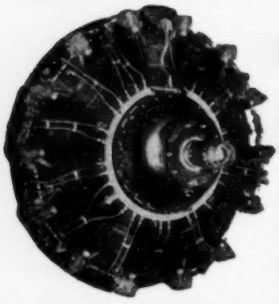

R1830-92

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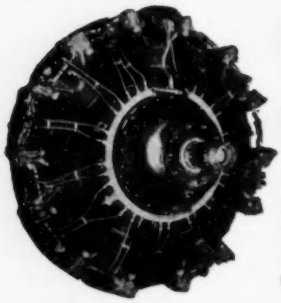

R1830-43-65

(Converted to 1830-92)

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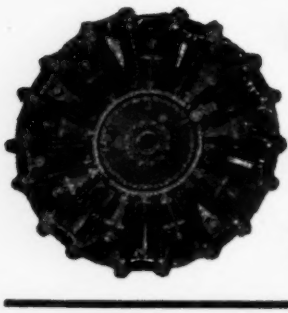

R985-AN-1, AN-3

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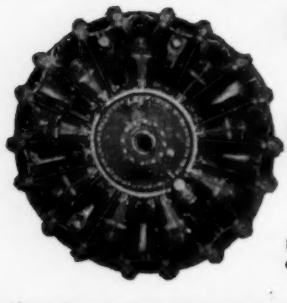

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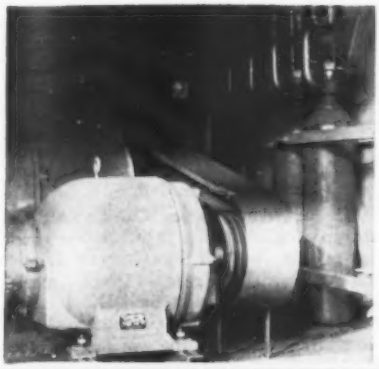
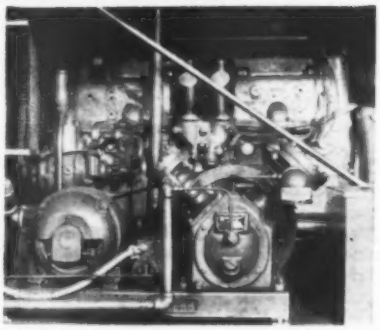
are not made, the Onan energizer is equipped with four 1,000-watt, 115-volt floodlights which are hinged into the truck roof. These can be raised or lowered manually so that they rest about 11 feet above the ground for optimum flooding effect. They may also be readily removed from their sockets in the truck for mounting on tripods as utility units.

Finally, the Onan energizers are equipped with a Type 30 Ingersoll Rand





THESE views show the interior of the truck with the Onan AC generator (top) in the foreground. This unit is belt driven. To the right are the CO-2 cylinders. The lower photo shows the Ingersoll-Rand air compressor which is used to provide compressed air for numerous aircraft servicing functions.

air compressor. Driven by a three-horsepower electric motor, this compressor supplies air to a storage tank from which it is drawn for filling tires, servicing hydraulic accumulators, operating pneumatic tools, etc. As mentioned above, a pressure gage for the air system is mounted on the control panel. Three outlets for hose connections are provided on the small panel.

The Onan Energizer is an expensive piece of equipment but it is a quality tool designed by Onan in close cooperation with the two airlines which are now using it in widespread operations. Recognizing the need for minimizing the number of units which must be used in servicing large aircraft, the unit provides multiple services which minimize crew requirements and provide vital services when and where they are needed. The ground power unit has come a long way.

Among the Suppliers

. . . **E. W. Allison**, with **Detrex Corp.**, Detroit, Mich., since 1941, has been elected secretary-treasurer.

Concurrent with the opening of offices at 6926 Melrose Ave., Hollywood, 38, Calif., **Airborne Accessories Corp.**, manufacturers of electromechanical equipment for aircraft, has appointed **R. G. Rogers** as manager of the new office . . . **Edward F. Arnott**, physicist with Westinghouse Electric Corp. since 1933, has been named acting research director of the **Westinghouse Lamp Division.** Arnott succeeds **Dr. Charles M. Slack** who was recently appointed technical director of the Westinghouse Atomic Power Division in Pittsburgh.

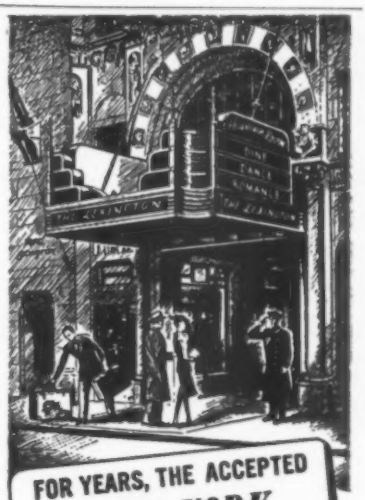
Rogers

Stewart-Warner Corp., Chicago, Ill., had a net earning of $1,296,284 for the first nine months of 1949, $1 per share of capital stock. This compares with $2.02 a share for the first three quarters of 1948 . . . Engineers at the **Bendix Research Laboratories** in Detroit have developed a machine that tests brake linings in hours instead of days or weeks as in previous tests. The machine evaluates friction levels, ability of the braking material to withstand heat and comparative value of multiple samples.

Photoswitch, Inc., mfrs. of photoelectric and electronic controls, has announced the appointment of **Oscar C. Stark** as general sales manager with headquarters in the factory sales office, 39 Broadway, New York City . . . **Charles E. Sharp** has been appointed industrial manager for the Chicago branch of the **Brown Instrument** division of **Minneapolis-Honeywell Regulator Co.**, **John A. Robinson**, twenty year veteran with Brown, has been named regional sales manager for the Midwest, Northwest, Rocky Mountain and Pacific Coast areas for Brown Instruments . . . **Mid-States Welder Mfg. Co.**, 6025 South Ashland Avenue, Chicago, Ill., has been formed to take over manufacture of the lines of welding equipment formerly produced by Mid-States Equipment Corp. President of the new firm is **Frank V. Lockefer** and secretary-treasurer is **Henry Cleys.**

Stark

Air Associates, Teterboro, N. J., has appointed **Robert Ringle**, formerly with Bell Aircraft Corp. and Curtiss-Wright Corp., as sales representative in Miami, Fla. Air Associates has been appointed Dallas distributor for O-Rings manufactured by the **Parker Appliance Co.**



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Nationwide pick-up and delivery *at no extra cost* in principal towns, cities.

One-carrier responsibility *all the way;* valuation coverage up to $50 without extra charge. And shipments always *keep moving.*

Most experience. More than 25 million shipments handled by Air Express.

Direct by air to 1300 cities, air-rail to 22,000 off-airline offices.

These advantages make Air Express your best air shipping buy. Specify and use it regularly. For fastest shipping action phone Air Express Division, Railway Express Agency. (Many low commodity rates in effect. Investigate.)

SPECIFY AIR EXPRESS

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Rates include special pick-up and delivery door to door in principal towns and cities

AIR EXPRESS, A SERVICE OF RAILWAY EXPRESS AGENCY AND THE SCHEDULED AIRLINES OF THE U.S.

OPERATIONS-MAINTENANCE

Two Airlines Now Using Omni-Range Facilities

Commercial airline use of the newly installed omni-range facilities were inaugurated recently by American Airlines and Continental Air Lines. Continental initiated use of the facilities along its 3,000 route miles in a cooperative test program with CAA. All of Continental Air Lines airplanes are fully equipped for omni-range use.

American received CAA approval to use the omni-range facilities immediately on the airway between Walnut Ridge, Arkansas, and Tulsa, Oklahoma, and is expecting to request approval in the near future for the facilities along the routes between New York, Syracuse, Rochester and Buffalo and between New York, Elmira and Buffalo.

All of American's DC-3 fleet is equipped with omni-range receivers and more than half of its Convair Liners are equipped. The remainder of American's Convairs and the DC-4 Airfreighters are being programmed for completion before the winter season starts.

Briton Is Wright Lecturer

A British aircraft designer, A. E. Russell, of the Bristol Aeroplane Co., will present the thirteenth Wright Brothers Lecture to be delivered on December 17 in Washington, D. C. Russell will discuss "Some Factors Affecting Transport Aircraft with Propeller Turbine Engines." Russell has been associated with Bristol for the past 23 years and in May spoke in the U. S. before the joint meeting of the R.Ae.S. and the IAS.

TECHNICAL LITERATURE

Windshield Tests: CAA's Technical Development division at Indianapolis has published Technical Development Report 93 titled "Impact Testing of Aircraft Windshields by Means of a Dropping Projectile." The report describes the investigations carried on at the National Bureau of Standards. Available from the Civil Aeronautics Administration, Dept. of Commerce Building, Washington 25, D. C.

Linear Actuator: Airborne Accessories Corp., 25 Montgomery St., Hillside 5, N. J., is circulating a four-page leaflet describing their improved model Lineator, a linear actuator designed to impart straight line force in either tension or compression.

Grader Booklet: Caterpillar Tractor Co., Peoria 8, Ill., has published a 31-page booklet entitled "Caterpillar Diesel Motor Graders." The illustrated booklet provides data on applications of the three Caterpillar models, the 100-hp no. 12, the 70-hp no. 112 and the 50-hp no. 212. Form 11960 available on request.

Schematic Manual: The Office of Technical Services of the U. S. Dept. of Commerce, Washington 25, D. C., is handling a 44-page "Schematic Manual for Surplus Electronic Equipment." It includes basic circuit diagrams, parts, values and voltages of a wide variety of transmitters and receivers which are available from government surplus stocks. Price $1 by check or money order payable to the Treasurer of the United States.

Trans-Australian to Test Avro C-102 in Cargo Use

According to reports from Australia, the Avro C-102, Canada's first jet-propelled transport, will undergo three months' testing in cargo service by Trans Australian Airlines starting in November of 1950. The reports state that the C-102 will first be shown for about one month in London in September of 1950 followed by formal showings in Australia before being turned over to Trans Australian for the test program.

A. W. Coles, chairman of the Australian Airlines Commission, and J. L. Watkins, TAA's technical superintendent, visited the Avro plant during a recent visit to Canada prior to attending the SBAC Flying Display and Exhibition in London in September.

Airwork Delivers E-185

Under its new program for overhauling Continental E-185 engines, Airwork Corp., Millville, N. J., recently delivered its first engine to Nutmeg Air Transport of Bristol, Conn. Airwork expects to process about 20 of these engines per month by the first of the year.

Daily Plane Utilization

International

		July	Aug.
AA	4 eng. pass.	5:47	5:47
	cargo	3:17	....
AOA	2 eng. pass.	1:26	2:05
	4 eng. pass.	6:58	6:19
Bnf.	4 eng. pass.	6:38	6:56
C & S	4 eng. pass.	8:54	8:45
Col.	4 eng. pass.	5:20	4:50
EAL	4 eng. pass.	9:13	9:06
NAL	4 eng. pass.	7:54	7:02
	cargo	1:23	:24
NWA	4 eng. pass.	10:19	9:46
Panagra	2 eng. pass.	4:29	4:27
	4 eng. pass.	7:27	6:22
	cargo	1:06	1:02
PAA			
Lat. Am.	2 eng. pass.	3:11	3:19
	4 eng. pass.	8:56	8:29
	cargo	1:42	1:47
Atlantic	2 eng. pass.	3:22	3:35
	4 eng. pass.	6:32	6:28
	cargo	5:32	5:08
Pacific	4 eng. pass.	7:56	8:05
	cargo	6:42	9:34
Alaska	4 eng. pass.	8:27	8:02
	cargo	6:50	6:22
TWA	4 eng. pass.	8:53	8:54
	cargo	6:02	4:30
UAL	4 eng. pass.	6:23	6:16

Feederlines

		July	Aug.
AAA	DC-3	6:29	6:27
Challenger	DC-3	7:28	7:32
Empire	DC-3	5:29	5:22
Monarch	DC-3	6:55	7:04
Piedmont	DC-3	7:27	7:25
Pioneer	DC-3	7:14	7:14
Robinson	DC-3	4:41	5:06
Southern	DC-3	4:39	5:04
Southwest	DC-3	5:44	5:43
TSA	DC-3	6:57	7:10
West Coast	DC-3	5:26	4:56
Wst. Cent.	Lockheed 10A	5:34	6:54

Extra Section

By William D. Perreault

GORDY WILLIAMS, assistant manager of Boeing's News bureau, dropped us a line with more data for the winged seat-back department. It seems that Boeing has solved this problem by means of a "differentially-stuffed headrest pillow." Boeing uses a small roll pillow covering with a complete goose down-stuffed insert. The center of the pillow is stuffed with soft material for the headrest while the ends have more dense down stuffing which gives the effect of wings, without the associated problems. All of the Stratocruisers, including BOAC's, have this pillow headrest made of goose down, which is the "next softest thing to 'goofer feathers' . . . which as you may know is made from the fuzz of peaches."

•

With the continued efforts of the military services to develop specialized compact equipment, the stranded airman may yet have all the comforts of home. The most recent practical gadget to be announced is the pneumatic quonset hut developed by the Air Force's Air Materiel Command. This is a cotton fabric hut which can be carried as a pack but with as little as a pound and one-half air pressure, supplied by a hand pump, becomes a full fledged quonset hut. The hut, which has no internal braces, was designed for Arctic survival and is being built by the U. S. Rubber Co.

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In the *United Airgram* for September, J. M. Barr, president of United Aircraft Export Corp., reports that Cubana Airlines has been flying the Atlantic to Spain for over a year with one airplane—a Douglas DC-4 (powered by Pratt and Whitney R-2,000 engines driving Hamilton Standard props), without a premature engine or propeller removal. The round trip takes 48 hours flying with eight landings per trip. The operation represents 2,500 hours for the period involved. A fine record for the airplane, engines and airline.

•

Solving the debate as to which way passenger seats should face in aircraft installations, Weber Aircraft division of Weber Showcase & Fixture Co., is marketing a reversible model seat which can easily be reversed by the passenger or stewardess to meet the passenger's interests. Weber reports that TWA will use these reversible seat combinations on their new fleet of Lockheed Constellations.

•

After scoffing at the idea of pressurizing a Douglas DC-3, we find that Scottish Aviation, Ltd. has converted a DC-3 for Bharat Airways of India to incorporate a pressurized compartment. It seems that the Sarder Patel, Indian Deputy Prime Minister, has medical complications which make it inadvisable to fly in aircraft subject to the pressure changes experienced without pressurization. The DC-3 has a two-passenger-plus-secretary compartment which is pressurized to maintain 1,000 ft. pressure altitude. To permit passage to and from the compartment, pressure locks are provided by doors which have pneumatic seals automatically inflated and deflated by door handle operation. Maximum differential pressure of the installation is 3.8 lbs.

•

The French have a word for it. Since French is the sole official language of the General Conference on Weights and Measures, the official record was about to use the word "Centesimale" for centigrade. By vote of participating groups it was decided to adopt the word "Celsius" as a substitute, thus the word centigrade will be replaced in official documents by the newer name. Anders Celsius, a Swedish astronomer, was the inventor of the centigrade thermometer. The Fahrenheit scale also takes its name from its inventor, G. D. Fahrenheit.

A QUEST FOR THE PERFECT "SHAPE"

► This research engineer is seeking the best airfoil shape for the small but vitally-important blades of a jet engine turbine or compressor.

► This "wind tunnel" in the Wright laboratories can push air past the test blades at the speed of sound — an unusually high velocity for this type of equipment. The blades may be rotated in the airstream to change the angle of attack or may be assembled at various spacings to find the most efficient relationship between air and blade. Pressure readings behind the blades are picked up by a traveling probe and automatically recorded.

► There's a sound reason for this large attention to small detail. For instance, a drop of one percent in the efficiency of the turbine section of a turbo-prop engine means a drop of three percent or more in shaft horsepower. The high speed of airflow is dictated by the fact that light weight gas turbines need the fewest possible compressor and turbine stages, which leads in turn to relatively higher speed of flow past the blades.

► This "cascade" test is one of many ways in which Wright Aeronautical Laboratories help along the "Jet Age" . . . through never-ending probing, proving and improving of all parts and materials essential to efficient jet-engine operation.

POWER FOR AIR PROGRESS

WRIGHT

Aeronautical Corporation • Wood-Ridge, New Jersey

A DIVISION OF CURTISS WRIGHT FIRST IN FLIGHT

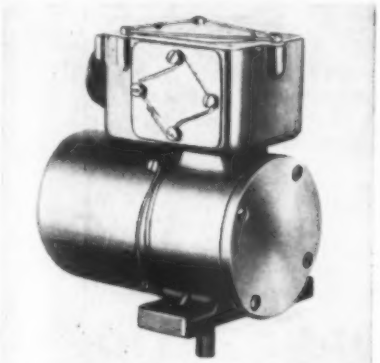
Temperature Indicator

Fairchild Camera & Instrument Corp., 53 West Union St., Pasadena, Calif., has developed a remote-reading ultra-high gas temperature indicator which measures gas temperatures up to 5,000 degrees Fahrenheit. In operation a small sample of the gas is obtained by means of a water-cooled stainless steel probe which can be manipulated to obtain a temperature traverse of the gas stream under test. This sample is passed

through a small iridium orifice, cooled, and passed through a second metering orifice and manually-operated pressure reducing valve to atmosphere. A differential pressure gage connected across the iridium orifice indicates the temperature.

Rotary Actuator

Barber-Colman Co., Rockford, Ill., has introduced a new lightweight rotary actuator for use in positioning valves and activating program switches or sequence controls and other aircraft accessory units. Features of the actuator, designed to meet ANM 40, include radio noise filters and dynamic braking. The unit can be controlled by



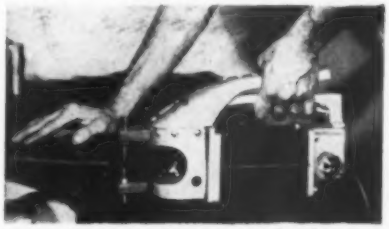
an inching switch, positioning rheostat or by an automatic temperature-sensitive bridge circuit. It is powered by 26 volt, 1.5 ampere, DC permanent-magnet motor and has a maximum torque of 50 lb. in. and a maximum travel of 300 degrees. Cam-operated limit switches are accessible for adjustment of actuator travel before and after actual installation. Weight is 14 ounces. Mounting is provided by two drilled flange pads.

Air Hose

B. F. Goodrich Co., Akron, Ohio, has introduced an improved Type 22 air hose with the tube and rubber made of oil-proof rubber compounds. Three-ply fabric reinforcement and dimensions of the Type 22 remain the same. The hose is made with a smooth-finish red cover with extra toughness to resist weathering and sun checking. It can be used in many applications including air, petroleum solvents and lubricating oils. Available in ¼" 5/16" and ⅜". Respective outside diameters are: ½", 9/16" and 21/32"; and weight per 100 ft.: 10.3, 12.2 and 15.1 lbs. The two smaller sizes withstand 150 lbs. working pressure, the larger, 125 lbs.

Spot Welder

Tool and Equipment Distributors, 636 S. 10th Ave., La Grange, Ill., is marketing a portable spot welder which, operating at 100 volts, will weld any two sheets of weldable steel 20 to 18 gage, galvanized iron, Monel, and Hoskins alloys plus stainless steel two gages thicker. The 220-volt unit welds up to 1/8" thickness. The 22-lb. spot welder is 4" x 4" x 15" in size and is operated with only one hand. "Big Shot," as the unit is known, is insulated for 1600 volts. A modulator or power control with the unit can be used to adjust power to



low-voltage conditions. A fixed upper tong is used to pick the point for spot-welding and the lower tong moves up to complete the circuit. The tips, which are adjustable to suit operations, are replaceable and can be filed as they wear. Capacity is 110 volt and 220 volts; 3 kva 101 No. 14, 3 wire conductor, 7/16" diameter.

Cable Press

Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh, Pa., is marketing the Velocity Power Steel Cable Press designed specifically for swaging connectors and AN type fittings onto standard tinned or stainless stranded cables in sizes from 1/16" to ¼" diameter. The unit is self-contained using gas pressure created by the discharge of a blank cartridge for the swaging operation. The model SD-14 press weighs 22 lbs. is 2½" x 6" x 10" in size. Replaceable sets of dies are available to accommodate each individual cable size in 1/16" to ¼" range. With the end or ends of the cable inserted in the jaw opening of the press, a cartridge is placed in the firing chamber and this is discharged with a small hammer which releases the gases and

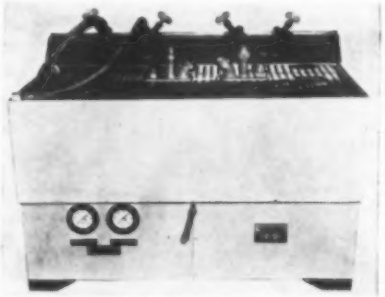
performs the swaging operation. The swaged connection will develop the full breaking strength of the cable itself under tensile load.

Transmitter-Receiver

Lear, Inc., 110 Ionia Ave., N. W., Grand Rapids 2, Mich., has introduced a deluxe VHF/LF transmitter-receiver, called model LTRA-5, bringing aircraft owners automatic VHF navigating equipment. Lear Omnimatic, with combination VHF/LF radio reception and VHF transmission in one compact lightweight design The four receivers provided insure reception of VHF facilities, LF radio ranges, 75 MC marker beacons and entertainment broadcast plus a two-watt VHF transmitter. Simultaneous reception of VHF and LF station is provided.

Oil Cooler Cleaner

Pacific Airmotive Corp., Manufacturing Div., 2940 No. Hollywood Way, Burbank, Calif., is marketing a Model PA 803-A oil cooler cleaner designed to circulate cleaning fluid through oil regulators and coolers. The PA 803-A is powered by a 2 h.p. motor driving a 20 gpm pump which provides pressures up to 80 psi. A manually-operated four-way valve allows reversible flow to assist in flushing the oil coolers. Strainers and filters are provided on the inlet and outlet valve from the coolers to



insure clean fluids. Instrumentation includes 20-100 psi pressure gages indicating pump and filter pressure. A relief valve protects the gage and system.

AGAIN...BG

SPARKS WINNERS IN FOUR

AT CLEVELAND

The winners of these 4 classics at the 1949 National Air Races were equipped with dependable BG Spark Plugs.

FOR AIRCRAFT ENGINES...AIRCRAFT SPARK PLUGS

THE BG CORPORATION

NEW YORK 19, N. Y.

SERVING WORLD AVIATION FOR 32 YEARS

Rhode Island Adapts Airport Plans to State's Limitations

Topographical smallness can have its compensations as well as its drawbacks with regard to a state's airport planning. A case in point is Rhode Island, smallest state in the union.

A little over 20 years ago, Rhode Island decided that it was too small (only 1,249 sq. mi. of area, including inland waters) to be able to permit every community that wanted and could afford one to build a sizeable airport. In bites of 100 to 500 acres, this could soon result in a serious loss of taxable land.

So it was in 1929 that a State Aeronautics Commission was created and given authority to construct, maintain and operate all public airports within the state's confines. This agency later became the Division of Aeronautics of the State Department of Public Works, a move which entailed a number of distinct advantages.

For one thing, it enables the Aeronautics Division to call upon other divisions of the Department for engineering and other technical services, for infrequently-used equipment that the Division does not need on a full-time basis, and for some bookkeeping services.

State Function. The construction, operation and maintenance of public airports in Rhode Island evolves naturally as a state function rather than as an activity of municipal governments because of the small area of the state and its high-density population.

The Division of Aeronautics has decided tentatively to develop one large terminal-type airport to serve Providence, the state's capital and largest city; to maintain the war-built Westerly airport to serve the Westerly area and the vacation and resort areas on the south shore; to develop the North Central Airport as an alternate to the Theodore Francis Green Airport at Providence; and otherwise to concentrate for the most part on single-strip airports requiring minimum acreages.

Green Airport had its beginning in 1929 when the Aeronautics Commission, as its first major act, acquired necessary land and constructed a turf field at Hillsgrove in Warwick, seven miles south of Providence. This was gradually developed into a Class 3 airport with three 4,000-foot concrete runways, two steel and brick hangars and a control tower. Work has just been started on a program to expand it into a Class 4 field.

Extension of the northeast-southwest runway to 5,000 feet was started last month, and work is to be started this fall on a parallel 5,000-foot instrument runway with high-intensity lighting and other improvements.

Master Plan. These improvements will be made in connection with a master plan for expansion of the airport which also includes the development of a new terminal area adequate to accommodate expanding traffic.

The building which formerly served as the administration building and airlines terminal now houses the headquarters of the Division of Aeronautics, with some space allotted as a flight operations office, a center for private flying activities and other purposes.

Traffic control, communication and Weather Bureau offices formerly housed in this building are now quartered in a tower column in one of the hangars, the upper floor of which has just been rebuilt by the state at a cost of $35,000.

Approximately one-half of the other hangar has recently been converted at an expense of $100,000 into an airline terminal. Demountable partitions, lighting and plumbing fixtures will make it possible to convert this back into hangar space within a short time if the need arises.

Land Deeded. Land for airports at Westerly and Block Island was taken by the local town governments and deeded to the state. Work on the Westerly airport was started before the war and the Navy took it over for the war period and developed it. Returned to state control, it now serves the industrialized area of Westerly and vicinity and the south shore resort area.

The Block Island Airport, on which construction has just been started under a Federal-aid grant offer, will have necessary buildings, a complete lighting system and a 2,000-foot paved runway, 100 feet wide, with a usable landing area 2,400 feet long and 300 feet wide. The island has always been dependent upon water transportation.

The airport in the northern part of the state, now designated as North Central Airport, will have a paved runway from

THE AIRLINES serving Providence recently moved into this space in one side of the Air National Guard hangar at Theodore Francis Green Airport at Hillsgrove. Conversion of a part of the hangar into ticket counter and waiting room space was a project of the Rhode Island Division of Aeronautics, which operates the field.

4,000 to 5,000 feet long and a diverging 2,000-foot turf strip, as well as an administration building and such hangars as may be required. This field will constitute a readily-accessible alternate to Green Airport, being located only about seven miles from Providence. When required, flight training and personal plane operations can be transferred to this field from Green Airport without serious inconvenience.

Bond Financing. Rhode Island's airport expansion program is being financed with the proceeds of a $3,000,000 bond issue which the voters approved better than 3-to-1 in 1948.

The Division of Aeronautics, which not only builds but also operates and maintains the state's airports, has an operations section headed by a chief of operations, and a facilities section operating under a supervisor of airports manitenance, with each section head reporting to the administrator.

For each airport in the state system, an operations manager is provided, this official having supervision over flight operations, aircraft storage, protective services and janitorial services. The state supervisor of airports maintenance is in direct charge of maintenance services at each airport, dispatching crews and equipment from his headquarters at Green Airport to any field in the state where other than routine maintenance is required.

All in all, Rhode Island's airport program is a smooth-working and economical activity, nicely suited to the state's size and topographical layout. Albert R. Tavani, aeronautics administrator, is generally credited with a good performance record.

N. Y. Reports Progress Of State Airport Program

The New York State Department of Commerce reports that 20 of the 27 certificated airline route points in the state will have adequate landing facilities by 1950.

The report said that more than $16,000,000 of Federal and local funds will have been expended in New York State on airport construction and development under the Federal Airport Act in the three years ending December 31.

Among upstate communities, the Broome County Airport is ahead with expenditures of about $3,657,000 in Federal and local funds for paving, grading, terminal building and other work. At New York International Airport $3.5 million of Federal and local funds is being spent on piers for approach lighting, extension of runways and other work.

Other major projects have been completed or are in process of completion at the Monroe County Airport near Rochester, at Syracuse's Hancock Field, at Buffalo and Albany municipal airports, at LaGuardia Field and at the Oneida County Airport.

N. Y. Airport Managers Join To Promote State Aviation

The results of a program to sell the public on aviation, conceived at the New York State Airport Management Conference last year, were outlined at this year's conference last month at Syracuse.

Describing the program was Claude B. Friday, director of the New York State Bureau of Aviation, who said its underlying purpose was to "prove to the vast population of the state that aviation is not only a sound business, run on the highest ethical and safety standards, but also that its facilities are available for use by every man, woman and child in the community."

In other words, Friday said, the New York program was aimed at proving that "those folks at the local airport are practical, hard-nosed business people, the same as the corner druggist and the hardware merchant, and that the local airport has a first-class piece of merchandise to advertise and sell."

The program was formulated in April, after the Bureau of Aviation had obtained a cross-section of ideas from the airlines, the municipalities, lightplane manufacturers, fixed-base operators and others. In support of the program, Governor Dewey proclaimed the month of May as Aviation Month and urged that the citizens of the state hold local aviation celebrations and appropriate ceremonies in support of the people who make aviation facilities available to them.

So Successful was the program that "Aviation Month" extended through October.

Opening show was given May 7 and 8 at Westchester County Airport under co-sponsorship of the combined chambers of commerce of the county and the Bureau of Aviation. It featured airline flights over the metropolitan area, commercial aviation demonstrations and static exhibits, military formation flying and exhibits and fly-bys of lightplanes. More than 50,000 got into the airport to see the show, and another 25,000 had to be turned away.

Subsequent programs of a similar nature were given as follows: Elmira, May 28; Binghamton, June 19, Watertown, June 26: Saranac Lake, July 10; Malone, July 24; Syracuse, September 17; and Rochester, October 2. Attendance figures for the eight events show that a total of 250,000 people—including for the most part whole family units—attended and actually became part of the activity at the airports.

And the encouraging thing was that all these people went to the airports after being told they should expect to see no spectacular aerobatics and stunt flying.

Elaborating on the concept of the

Inspection Tour—Directors of the Airport Operators Council found an inspection tour of Pan American Airways' overhaul base a highlight of their recent mid-year meeting in Miami. Shown, left to right, inspecting an R-2000 engine, are Humphrey W. Toomey, manager of PAA's Latin American Division; B. M. Doolin of San Francisco, president of AOC; A. B. Curry of Miami, first vice president of the group, and C. J. Lowen of Denver, second vice president.

New York State program, Friday said:

"We wanted the people of the state to see what aviation means to their economy, how it affects them directly, and what aviation means to commerce, industry and recreation.

"We wanted to see the whole family spend a day at the local airport, to look at the exhibits, and witness first-hand the potentialities of aviation. We wanted these families to take their first airplane rides in luxurious and comfortable airliners or at least in small personal-type aircraft, to see their homes and neighborhoods from the air. We wanted them to feel proud of their airport facilities and return home with the idea that aviation and flying is safe and economical, not because someone told them so but because they experienced it themselves."

This theme apparently struck a responsive chord. The participating airlines reported that more than 2,500 people went on local-area flights during the eight shows. And it was estimated that 70% of these passengers were taking their first flight—a flight made under the most favorable conditions, and a flight that won new boosters for aviation.

Friday said the program will be repeated next year, with some refinements based on this year's experience and with more communities taking part.

"I believe our fundamental approach is right," he said. "We want to get people out to the airport and on familiar speaking terms with aviation and aviation people."

The Airport Management Conference at which Friday spoke was attended by more than 125 airport managers, fixed-base operators, and other industry representatives. It was a forum-discussion type of program, with each subject getting much response in the discussion period.

CAA Clarifies New Runway Policy

Demand for clarification of the Civil Aeronautics Administration's new policy with regard to expenditure of Federal funds for construction of airport runways was so widespread that Administrator D. W. Rentzel has issued a redraft of the statement.

The new policy, which it was emphasized does not affect projects already approved, made minor concessions to the objectors but retained the key aim of spending Federal funds on more than one runway at a given airport only for the purpose of increasing the traffic acceptance rate.

"It is a recognized fact," said Rentzel, "that future aircraft design is toward aircraft less affected by crosswind conditions. Further, the new airways traffic control system is aimed at speeding up en route traffic between ground points. A paramount requisite of this new program will be the increasing of the acceptance rate of airports . . . by the simultaneous use of runways."

In accordance with this premise, he said, CAA will participate in the construction of an additional new runway or runways on Class II and larger airports where it is shown that such runway or runways are necessary to expedite traffic and are so located as to provide simultaneous use. This was virtually the same policy previously announced for Class II and larger airports, the latter policy asserting that Federal aid would be available for more than one runway only if desirable from operating requirements other than wind coverage and only if built parallel or divergent to and not intersecting with other runways.

On Class I airports, the Administrator said, exceptions to the single-runway policy will be made only where it can be demonstrated that traffic volume requires more than one landing strip, and where so demonstrated and approved, any additional runway or strip must be so located as to provide maximum traffic utility.

The previously announced policy had called for Federal aid for only one runway at a Class I airport, with deviation from this permitted "only when approved by the Washington office on the basis of a request from the regional administrator justified by exceptional conditions other than wind coverage."

The only major concession made by CAA in the policy clarification was to agree that, for airport planning purposes, it will participate in the acquisition of land in excess of that required to comply with the basic policy when determined necessary for normal expected expansion.

Airport Notes

Patrick Henry Airport at **Newport News, Va.**, was formally opened to commercial aviation on November 13. Two airlines—Capital and Piedmont—will use it initially . . . The new terminal building at **Bisbee-Douglas (Ariz.) International Airport** is now in use . . . Natural gas found at **Las Vegas Municipal Airport** will be used to heat the airport pump house when the project is completed.

A $1,789,400 contract for interior construction of the **Greater Pittsburgh Airport** terminal building has been awarded to the Dick Construction Co. of Pittsburgh. Work was to start this month. Meanwhile, Aviation Director John B. Sweeney has asked the board of county commissioners for a conference on the building of a $1,500,000 hangar for the $20,000,000 field.

The **Minneapolis-St. Paul Metropolitan Airports Commission** has settled upon a site just east of Lake Elmo for a new secondary airport to serve St. Paul lightplane owners and pilots in much the same manner as the **Flying Cloud Airport** serves Minneapolis pilots. The MAC has an option to buy 160 acres of land at the proposed site at a cost of $38,000.

Don Self, who resigned recently as airport manager at El Paso, has accepted the job as manager of the **Valley Airport** at Harlingen, Tex., replacing Merle Huston . . . Improvements costing over $600,000 have been completed at **Bader Field**, Atlantic City's close-in lightplane airport, including lighting, paving, grading and installation of a drainage system.

Saginaw, Mich., is again operating its Municipal (Janes Road) Airport, which Russell J. Purchase, lessee since 1945, gave up recently when his lease expired. Purchase said the city did not cooperate properly in maintaining the field . . . John J. Souza, owner of the **Turlock Air Park** at **Modesto, Calif.**, has asked the State Supreme Court to overrule a Superior Court decision granting an injunction terming the field a public nuisance and prohibiting further operation.

Construction has been started on the new hangar at **San Antonio Municipal**. Meanwhile, occupancy of the new feederlines terminal at the field has ben delayed by a stay-out strike on the part of the airlines in protest over a proposed rental charge of $2 a square foot. Charges levied for space in the present temporary administration building are 95c a square foot.

Mrs. Frances W. Nolde, nationally-known aviatrix, has been appointed to the **Reading (Pa.) Airport Commission**, succeeding Daniel H. Huyett, who died last month. She's the first woman and the first licensed pilot to be named to the commission.

CAA Airport Grant Offers

For the two-week period ended October 31, Federal-aid airport grants totaling $1,808,227 were made to 28 communities by the Civil Aeronautics Administration, as follows, with classes in parentheses:

Alabama: Andalusia Opp Municipal (3), $6,628.

Arizona: Springerville Eager (2), $912; Yuma County Airport (6), $26,845.

Arkansas: Blytheville Mun. (4), $25,000.

Colorado: Cortez (Montezuma Co. Airport) (2), $4,100; Denver (Stapleton Field) (6), $31,400; Montrose Mun. (3), $13,000.

Florida: Miami International (6), $262,625.

Georgia: Augusta (Bush Field) (5), $60,491.

Indiana: Valparaiso (Porter Co. Mun.) (2), $45,500.

Iowa: Jefferson Mun. (1), $7,000.

Michigan: South Haven Airport (2), $18,000.

Minnesota: Brainerd (Crow Wing County) (3), $5,000; Fairmont Mun. (2), $21,000; Little Falls Mun. (1), $16,500.

Mississippi: Jackson Mun. (4), $2,252.

Montana: Roundup (1), $4,596.

Nebraska: Bayard Mun. (1), $13,080; Imperial Mun. (3), $21,071.

New Mexico: Hobbs (Lea Co. Airport) (4), $18,000.

New York: N. Y. International (7), $850,000.

Tennessee: Jackson (McKellar Field) (3), $5,000; Paris (Henry Co.) (2), $3,426.

Texas: Borger (Hutchinson Co.) (2), $221,488.

Utah: Hurricane Mun. (2), $9,652; Price (Carbon Co.) (3), $74,183.

Washington: Seattle (King Co. Airport) (7), $27,228.

These boosted the Federal-aid grants through October 31 to 1,004 and the Federal funds involved to $90,984,727.

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PRETESTED IDEAS

Hydraulic Test Rig

THIS IS the test rig developed in Eastern Air Line's shops at Miami to simplify testing of the Vickers hydraulic pumps and motors used in the cabin pressurization system of the Lockheed Constellations. The efficiency of the pumps and the oil delivery rate are determined during the test.

The rig consists of two pumps and one motor which act as a variable gear ratio actuator for the impeller drive.

The two pumps are of the variable-displacement type and the direction of flow can be reversed to simulate actual conditions. The associated plumbing parallels the ship's installation and provides for the pressure readings.

Runway Light Protectors

TO MAKE runway lights easier to sight during daytime operations, and less susceptible to damage, Maintenance Superintendent McCarren at Logan International Airport has placed old automobile tires around the base of the lights at the intersections where damage is most frequently incurred. The tires are painted in vivid yellow and red colors and present a neat appearance.

The problem of keeping the runway lights at intersections intact is critical at Boston, as at other airports handling the same type traffic, because heavy training planes, used by the National Guard there, have poor forward visibility during taxiing. Weaving from side to side to check other traffic and sight the turn-off point, the planes strike and knock over the lights which are designed with a low value shear coupling, a CAA requirement.

In addition to making the light more obvious to the pilot, the tire acts as a bumper and fends off the wheel before any damage is done. With miles of runways to light, Boston's airport looks like a farm with the Line Material lights mushrooming everywhere.

Tail Wheel Stand

MANY AIRCRAFT service shops use old gasoline and oil drums or wooden boxes for supporting light plane tail wheels, when it is necessary to place planes in level flight position.

This tail wheel stand is easily adjustable for any conventional gear light plane. The base was formerly part of a street traffic sign. Telescoping steel conduits are drilled with through holes for pin adjustment. The tail wheel receptacle is made from heavy gauge welded steel plates. Uno Fredrickson, foreman of the customer's service dept. of E. W. Wiggins Airways, Inc., Norwood, Mass., designed and built the stand.

$50,000 Catalyst:

Plans for Agricultural Plane Developing Rapidly

Specific plans for the agricultural airplane and related spraying and dusting equipment under development at Texas A. and M. College are now taking shape. CAA's Fourth Region, with headquarters in Fort Worth, is completing final contractural details under which Texas A. and M. will handle the project which is being jointly sponsored by the CAA and Department of Agriculture.

Present plans call for the completion of the research, design and engineering data necessary for the construction of the first airplane by mid-December. The equipment should be built and placed in operation in the spring of 1950 and initial production is tentatively scheduled for late 1951 or early 1952.

Prominent in citing the need for this development, the Flying Farmers are contributing valuable data on which the characteristics of this plane will be based. Partial returns from a CAA survey among the Flying Farmers clearly outline the needs. The airplane will have a load capacity of about 800 lbs., be capable of taking off with an 800-ft. ground run, climb at a sharp angle, operate at 70-80 mph with a maximum cruising speed of about 100 mph and have sufficient fuel for two or three hours operation.

Design Details. The agricultural airplane, which at its inception was visualized as an all-metal ship, will actually be utilizing a steel frame with fabric covering since the Flying Farmers cited easy maintenance of the fabric aircraft as a necessity. Control surfaces will be all metal. Fifty-seven of those polled preferred fabric construction as compared to 39 in favor of an all-metal ship.

Power for the plane will initially be supplied by a Continental 185-horsepower flat engine but provisions will be made for using the geared Lycoming or Continental engines of higher horsepower which are now under development. The propeller will have aluminum blades rather than wood.

Although 53 of the farmers polled showed preference for a high-wing airplane, compared to six in favor of a low-wing design, it is understood that Fred Weick, director of personal aircraft research center at Texas A. and M., is planning on a low wing design. Considerable leeway in the final design will be left to the college.

Safety Major Factor. The choice of wing location ties in closely with visibility and general safety considerations. Weick plans on integrating the results of the Crash Injury Research project into the aircraft's design and this may influence final design beyond the poll results. Particular emphasis will be given to protecting the pilot by keeping loads away from his compartment, providing maximum visibility, making the cockpit immune from penetration by the compounds in use, use of shock-absorbing nose structure, etc.

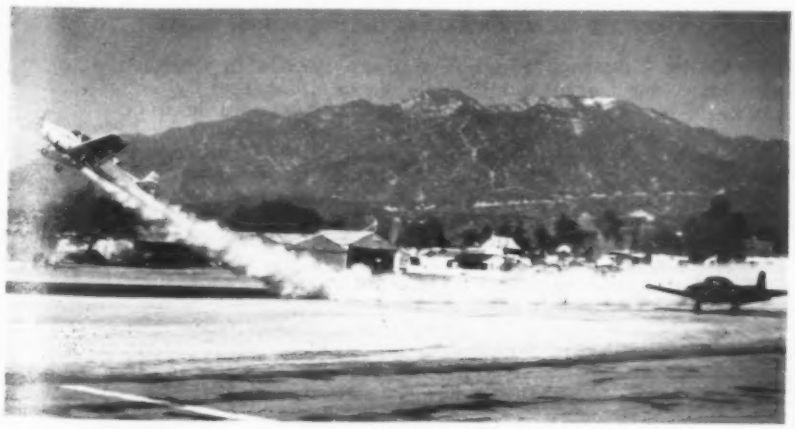
While the initial choice of an opposed engine was based on obtaining maximum visibility, provisions will also be made for using the Continental radial engine.

Finally, in the design criteria, initial thinking calls for locating the hoppers for dusting chemicals in the center wing panels and tanks for the liquid spray in the outer wing. Since this type arrangement is experimental, provisions for the dust hopper will also be made in the fuselage. The separation of the dust and the engine exhaust will be a critical factor in final arrangement as will the simplicity of loading dust and spray and the ease of switching from dust application to spray and vice-versa.

$10,000 Selling Price. What will this aircraft cost? Fifty thousand dollars is the initial sum being set aside for the project and this is expected to handle the design work. Cost to the ultimate purchaser is expected to be $10,000 although this is the top of the price bracket recommended in the poll mentioned earlier. Actually, 49 poll replies thought the price should be between $2,000 and $3,000 and 46 placed the price as $3,000 to $6,000.

There are widespread differences in the figures relating to aircraft in use for agricultural applications. Duplication of aircraft used in both spraying and dusting account for some of this. Best indications are that the number runs around 5,000 planes and that the potential market for an agricultural plane is about 1,500 units a year. Whether this market will exist at the $10,000 figure estimated by Weick is an important question.

There has been considerable discussion about the CAA stepping into the design of a light aircraft. It represented, said some industry circles, government competition with private enterprise. In a letter to Joseph T. Geuting, Jr., manager of AIA's Personal Aircraft Council, CAA Administrator D. W. Rentzel assured the industry that the CAA and the Department of Agriculture were



Junior Jato—Aerojet Engineering Corp. is experimenting with a Junior Jato unit for use on planes of the Ryan Navion class, shown here in a take-off using the new unit. The Navion normally requires 875 feet to clear a 50-foot obstacle but with the jet assist makes it in about 300 feet. Dual nozzles make it possible to use the Junior Jato for assisted take-off or for braking the airplane during landings. As a braking mechanism, the unit releases 2,000 lbs. thrust for two seconds. The Navions in this photo started at the same instant. Close-up view of the Junior Jato (right) shows the manner in which it is attached to the airplane. The 50-lb. installation produces 250 lbs. thrust for 15 seconds when used to assist take-off. This is roughly the equivalent of 100 hp. Because the propellant used is classified by the Navy, Junior Jato units will not be immediately available commercially.

"merely interested in providing the 'catalytic agent' as it were, to really get this agricultural airplane aircraft potential started."

"If the results of this work appear to warrant, we plan to interest manufacturers, bidding competitively, in building a few prototypes of this aircraft at a figure which will cover small-lot tooling, making use of pertinent, hitherto unavailable, information worked up with the first aircraft," said Rentzel.

Manufacturers' Position. Meanwhile, despite reports in the trade press to the contrary, there appeared to be little manufacturing opposition to government financing of personal aircraft design, if it is intelligently handled. Crocker Snow, chairman of the research and development committee of the National Association of State Aviation Officials on Oct. 31, reported that of 11 manufacturers questioned about government financing of light plane development, seven were in favor, one was strongly opposed and three were more or less neutral.

James R. Harrington Killed In Cargo Plane Accident

James R. (Bud) Harrington, 45, operator of Harrington's, Inc., of Cleveland, and former manager of the Mansfield (O.) Municipal Airport, and two associates were killed in a crash of a DC-3 freighter while trying to reach Akron-Canton Airport the night of November 4.

Harrington had been active in aviation for nearly a quarter of a century and had nearly 5,000 hours of flying time. He was a Civil Air Patrol group commander during the war and since then had been a fixed-base operator and irregular air carrier based at Cleveland.

Killed with him in the accident were: John E. Franklin, of Olmsted Falls, chief pilot for Harrington's, Inc., and Robert S. Yarano of Cleveland, a Harrington mechanic.

Fixed-Base Briefs

R. L. Bowen of Fort Worth, aviation enthusiast of many years' standing, is the newly-elected president of the Texas Private Flyers Association. **George Haddaway** of Dallas is secretary . . . After an absence of several months, **Harold J. Cary** has returned to Foster Field, Tuscaloosa, as acting manager of **Bama Flying Service.**

Brayton Flying Service of St. Louis, and **Stephens College**, Columbia, Mo., have made application to the Civil Aeronautics Administration for permission to take advantage of the training program utilizing four-place planes and allowing credit for observer time. This course was approved last month by CAB.

Officers of the **Alabama Air Service Operators Association** for the current year are: **Charlie Roberts**, Southern Airmotive, Dothan, president; **J. B. Carl**, Dixie Air, Tuscaloosa, vice-president; **Bob Hudgens**, Montgomery Aviation Corp., Montgomery, secretary-treasurer.

The second annual **Custom Spray Operators' School** at the University of Illinois will be held January 17-19 in Urbana. Conference is open to both ground and aerial sprayers without charge.

Pennsylvania Aeronautics Commission has produced a "Sample Weather Report" in chart form for use as an aid to pilots who are not entirely familiar with the symbols as used on the teletype transmittal. Printed in large type on 16" x 21" cardboard, it should prove to be a valuable aid.

The following airports and landing fields in **Ohio** have been closed: Graham, Adams Mills; Botkin, Woodstock; Blymer, Mt. Blanchard; McKee S.P.B., East Liverpool; Lakeville, Conneaut.

Aviation Sales and Service

Flying Salesmen: Cessna Aircraft Co. has furnished an effective answer to Rafael Dillon, president of the Aero Club of Ecuador, who charged recently that "representatives of U. S. lightplane manufacturers have traveled through South America by commercial airlines, placing themselves in the same category as an auto salesman who travels by bus." Dillon said this was not conducive to sales and constituted "a great mistake" on the part of American lightplane manufacturers. Dillon may not have known it, but shortly before he voiced this criticism, Don Flower and Gene Charlton, general sales manager and export manager, respectively, for Cessna, left Wichita in a four-place Cessna 170 for a flying sales trip that will take them over 19 countries in Central and South America.

Aircraft Parts Co-op: *Twenty flight service operators from various sections of the country met at Omaha recently and raised $40,000 to help launch the Aircraft Dealers Corporation, a purchasing co-op for local service operators. Aim of the group, according to Kenneth Decker of Los Angeles, its president, is to eliminate some of the "middlemen" in aircraft parts sales and thus bring down the price. The plan includes establishment of a central buying agency and distribution through 21 warehouses over the country. Membership goal is 1,000, with about 300 operators already signed up.*

Aerial 'Newsboy': William H. (Bud) Rhodarmer, 34-year-old owner-manager of the Continental Divide Aviation Co. at Rawlins, Wyo., is making a good thing out of a door-to-door newspaper route serving upwards of 400 miles of ranch country in Wyoming and Colorado. Using Cessna 170's, Rhodarmer's company started dropping copies of the Denver Post in ranchyards last April, with a note tucked inside saying an airplane would drop the paper every Sunday at a cost of 25¢ weekly if the rancher desired. He picked up 50 subscribers the first week and is now well on his way to 500. Ranchers hang flags to their tallest structures if they want the paper. The pilots "buzz" the ranchhouses to make sure someone is around to see where the paper falls. They haven't missed a ranchyard yet.

Air Ambulance: *A standard Hiller 360 helicopter has been modified by United Helicopters into an air ambulance incorporating two cabin-connected enclosed "Stokes" litters. While the military has had helicopter air ambulances specifically designed for emergency rescue and pickup work, it is thought this is the first commercial 'copter to be so modified. The French government has contracted for the first two off the assembly line for use in Indo-China.*

Cattle Dousing: Progressive sheep herders in Oregon are using airplane service to spray whole flocks of sheep. By spraying the ewes now, says County Agent Ben Newell, lambs born next spring will be tick and horn-fly free. In one instance last year 2,000 sheep and 250 head of cattle were sprayed with DDT with extremely good results. Thirty minutes after the planes passed over the flock 76% of the flies were dead and all were gone within four days. Thirty-six hours later no live ticks were to be found. Total cost to the herder was $83.00. Time saved in the process was remarkable, since the only time involved was that required to move the animals into a corral. Planes passing over caused no stampedes, and only effect was to cause the animals to bunch together.

21,000 Route Miles:

Expanding Coach Network Opens $15 Million Market

By WILLIAM V. HENZEY

After one year of gradual development the aircoach program of the scheduled industry is commencing to look like a "big business" proposition. Counting the present 13,000-odd coach route miles in operation and the 8,000 or more proposed for activation next month—CAB permitting—the active carriers will be in a position to absorb over $15,000,000 of the traveling public's spending potential by June 30th.

Touched-off by Capital Airlines' 713-mile operation between Chicago and New York one year ago, the youngest and perhaps most dynamic development in the industry today, including present and proposed services, now embraces three transcontinental operations, a north-south operation on the west coast, two north-south operations on the east coast, and a virtual blanketing of the major points east of the Mississippi.

Sound Network. Significantly, despite the rapid growth of coach services, little could be said in support of a charge of "over-expansion," for the picture today reflects a logical approach by the industry and the CAB to the establishment of a sound network of coach routes.

Between no two points in the country do more than two scheduled lines participate in a coach program on the same basis, and, with the number of flights per day limited, no one carrier can be said to be harming another's operation from a competitive standpoint, discounting, of course, the effect of these services on the non-scheduled industry.

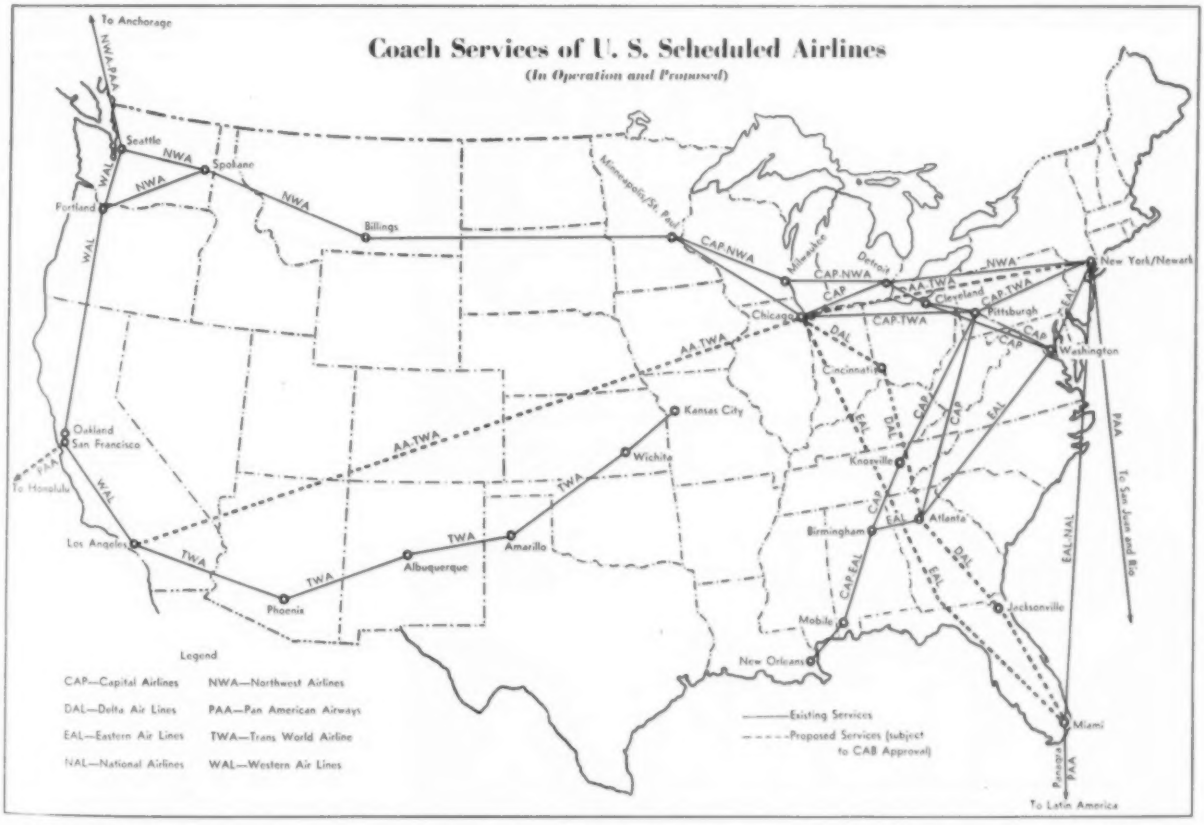
At present, one-half of the sixteen certificated trunk-lines are either in the business or committed to start next month. Of these, the early pioneers, Capital, Northwest Airlines, and TWA, are still going strong, and unless the unexpected happens, will be among those asking CAB for an extension of coach tariffs beyond June 30, 1950, the deadline date set by the Board for the current "experiment."

The others, American, Delta, Eastern, National, and Western, have gone or are going into lucrative markets, which most observers feel should bolster arguments of coach service enthusiasts.

Latest Additions. Newest proposals which CAB must weigh within the next few weeks are those of Delta and Eastern between Chicago and Miami, and those of American and TWA between New York and Los Angeles via Chicago.

For Delta, it marks the first affirmative move made by the line in the coach service direction, and though limited to one round-trip daily, it is "big-time" when viewed in terms of route miles. Delta's Chicago-Miami route is the longest one over which the line is certificated, and with the inclusion of stops at Cincinnati, Atlanta, and Jacksonville, Delta will strive for a maximum amount of traffic in its initial attempt.

Moving in on the Chicago-Miami coach market is a new step for Eastern, but not the first coach program the line



RAPID EXPANSION of coach-type services offered by the scheduled airlines is graphically pictured in this new map on which are plotted existing and proposed air coach services. Inaugural dates of proposed new services, subject to CAB approval, are: American and TWA, from New York to Los Angeles via Chicago, December 27; Delta Air Lines, from Chicago to Miami via Cincinnati, Atlanta and Jacksonville, December 16; and Eastern Air Lines, Chicago—Miami, December 1. TWA's present service from Los Angeles to Kansas City via several intermediates is due to expire December 31.

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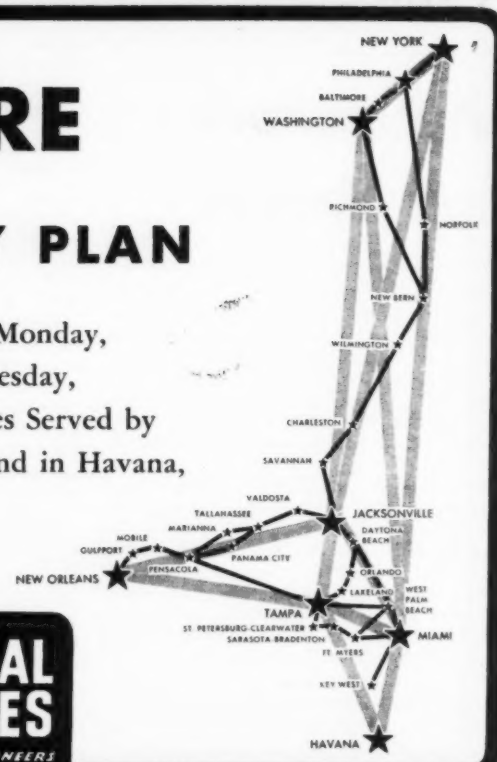

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has attempted. Currently operating a New York-Washington-New Orleans service, the line started a New York-Miami non-stop operation with National on November 1. Though basically the same, however, the programs of both Delta and Eastern will need detail adjustment.

Modification Likely. Delta has asked CAB to approve a Chicago-Miami fare of $49.85 which, on mileage constructed via the three intermediate points, is $2.40 above the non-stop fare of $47.45 proposed by Eastern. Add this to the service advantage Eastern would enjoy by operating non-stop flights while Delta's flights are making three intermediate stops and weight is given to speculation that one or the other will alter its original proposal.

In the transcontinental field, American's bid for approval of a New York-Chicago-Los Angeles operation was matched by TWA last week, as expected. Operating a Stratoliner service between New York and Chicago, and a DC-3 service between Kansas City and Los Angeles (slated to expire December 31), TWA plans to enter the transcontinental market with 60-passenger DC-4's initially, and with Constellations later if American switches to DC-6's.

Thus, unless CAB sees fit to block any of the four pending proposals, the route map of the scheduled coach industry stands to be increased approximately 60% before the first of the year. With the promise of still larger equipment in a few more months, together with anticipated newcomers the possibilities of a much greater percentage increase by next June are extremely strong.

Eastern Asks Court Action On Interchange Decision

Eastern Air Lines has filed a petition asking the United States Court of Appeals for the District of Columbia Circuit to review and set aside the Civil Aeronautics Board's decisions permitting American Airlines and Delta Air Lines to operate a southern transcontinental service through equipment interchange. Eastern charges that the Board erred "in failing to find that approval of the American-Delta interchange agreement will result in a monopoly restraining competition and jeopardizing another carrier not a party to the agreement."

Airports File Planned

The Airport Operators Council is setting up a complete information file covering the capital investment, costs and revenues, rules and regulations, concessions and services, rates and charges made by each member airport. The file will be in two divisions: a public information file, and a confidential file. Purpose of the latter is to enable AOC officers to know details not yet released so that a general trend of thinking may be indicated when related questions are asked by other members.

Over the Counter

By Eric Bramley

Passenger Service

THE man-of-the-month, in our books, is **Johnny Sutton,** Delta's superintendent of passenger service. During a recent visit to Atlanta we learned of the "smile campaign" he has been conducting among the company's stewardesses. One morning each stewardess received through the mail a tube of a well-known toothpaste, wrapped in a cleverly-drawn cartoon stating, "One smile says more than a million words." Then, in their next pay envelopes, each gal received this note: "The 45,339 passengers who rode with us last month send this check to you in appreciation for the way you looked after them. On every trip you make, why not give them a warm, friendly smile to express your gratitude and to thank them for flying Delta." In the following pay envelope was another note: "Every one of these dollars is a good dollar, with no occasional bad dollars thrown in. Make every flight a good flight." Then, to end the campaign, they all received a drawing of a mule, captioned: "Don't be stubborn—smile." Results have been terrific.

Sales Promotion

HAVE you seen **National Airlines'** new paper match folders? The cover, currently causing much comment, says: "Don't Travel Half-fast, Fly National" . . . Ask someone in **Capital Airlines'** airfreight department to let you see the poster they're distributing to shipping clerks to hang on the wall in cargo departments. We can't describe it here (except to say it has a girl in it) but it's a lulu . . . **United Air Lines** is holding meetings in Chicago, New York, San Francisco and Los Angeles with **Railway Express Agency** personnel to describe operational plans and new navigational aids which it says have improved air express service through increased dependability of winter flight schedules . . . An excellent idea for promoting off-season travel is being pushed by **Scandinavian Airlines System,** in connection with the Stockholm Chamber of Commerce. It's called a "businessmen's fact-finding tour of Europe," arranged by Fallenius and Lefflers, Stockholm. The tour (three weeks during next February and March for the all-expense price of $975) will enable U. S. businessmen to "see for themselves present-day conditions, establish personal business contacts, and develop new markets," says SAS. Tour will cover Sweden, Norway, Denmark, Holland, Belgium, France and England, and it sounds like the red carpet will really be out. Very smart idea . . . SAS also promoting safari hunts in Kenya Colony, East Africa . . . **Northwest Airlines** distributing attractive direct mail piece on use of Stratocruisers coast-to-coast and to Hawaii.

New Services and Traffic

PAN AMERICAN Airways, subject to CAB approval, will institute new 20-trip commutation tickets for travel between the west coast and Honolulu beginning Dec. 3. Fare per flight will be $130, which is $30 below normal one-way fare. Each book will cost $2,600 plus tax and will be valid for six months' use. Tickets will be sold to individuals, firms or organizations.

Northwest Airlines on Nov. 5 inaugurated Stratocruiser service all the way from New York to Honolulu. Westbound trip takes slightly over 21 hrs., eastbound 20 hrs. . . . **Pan American Airways** discontinued weekly DC-4 San Francisco-Manila cargo flights Nov. 1 with inauguration of twice-weekly Stratocruiser service between those points . . . On the same date Pan Am increased U. S.-Europe all-cargo flights from two to three weekly . . . **Wisconsin Central Airlines** plans service to Ironwood, Mich., starting Dec. 1 . . . Wisconsin Central started the family plan on Nov. 10 . . . **All American Airways'** tickets are now being sold by **American Airlines'** downtown ticket offices in Baltimore, Buffalo, Cincinnati, Newark, New York, Philadelphia and Washington . . . **Pan American Airways** on Nov. 4 replaced DC-3's with Convairs on the route from San Juan, Puerto Rico, to Port of Spain, Trinidad, two round-trips weekly . . . **British Caribbean Airways,** recently purchased by **British Overseas Airways Corp.,** is flying two round-trips weekly between Miami and Kingston, and will increase to daily on Dec. 1. DC-3's will shortly be replaced by 21-passenger Vickers Vikings . . . **Trans-Texas Airways on** Nov. 1 started service into Corrizo Springs-Crystal City, Tex. . . . **Capital Airlines** on Nov. 4 celebrated the first anniversary of New York-Chicago aircoach service, and states it has carried 135,300 passengers on coaches during that period . . . **American Airlines** is selling a $98 eight-day vacation tour to the Arizona "sun country." Transportation is not included in the price but all other expenses are covered. Package is available until next May . . . **Colonial Airlines** will shortly start merchandising three to 10-day all-expense winter sports tours to Montreal, Quebec and the Laurentians, costing from $46.10 to $126 . . . **Continental Air Lines** and **LAMSA,** Mexican line, have signed an interline freight agreement.

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U. S. Domestic Airline Revenues & Expenses for July

Airlines	Total Operating Revenues	Passenger Revenues	Mail Revenues	Express Revenues	Freight Revenues	Excess Baggage Revenues	Non-Scheduled Transport Rev.	Total Operating Expenses	Aircraft Operating Expenses	Ground & Indirect Expenses	Net Operating Income
American	$ 8,654,925	$ 7,703,525	$ 382,839	$ 102,036	$ 379,977	$ 83,516	$ 6,227	$ 7,600,219	$ 3,664,419	$ 3,935,800	$ 1,054,706
Braniff	1,307,249	1,051,434	203,931	18,696	20,663	10,161	889	1,212,766	620,871	591,895	94,483
Capital	2,434,853	1,979,722	266,856	28,516	98,280	12,140	28,058	2,144,353	1,028,142	1,116,211	290,501
Caribbean	65,407	47,638	13,719	. . . .	2,561	207	. . . .	64,984	28,673	36,311	423
C & S	795,757	586,055	164,467	14,574	11,399	7,157	708	657,796	265,024	392,772	137,961
Colonial	465,010	346,633	108,344	2,548	3,256	2,703	588	390,217	190,899	199,318	74,793
Continental	486,009	338,068	120,486	2,493	6,641	2,623	8,141	461,539	207,502	254,037	24,470
Delta	1,313,082	1,008,925	239,612	14,507	31,453	10,769	. . . .	1,258,373	581,247	677,126	54,709
Eastern	5,296,785	4,827,309	224,434	71,290	95,953	65,980	. . . .	5,347,232	2,784,111	2,563,121	-50,448
Hawaiian	331,673	281,196	3,262	9,058	25,734	9,340	1,462	297,201	118,040	179,161	34,471
Inland*	266,447	215,949	44,904	1,207	2,382	1,866	. . . .	188,124	83,636	104,488	78,323
MCA	667,601	524,014	124,608	6,476	5,881	4,224	993	590,459	264,610	325,849	77,143
National	960,149	766,622	143,879	7,114	13,543	22,232	2,428	1,065,965	571,494	494,471	-105,816
Northeast	663,152	510,693	139,465	2,707	6,336	3,053	. . . .	539,574	278,694	260,880	123,578
Northwest	2,733,394	2,382,684	266,426	34,800	64,058	18,579	7,217	2,176,627	971,262	1,205,365	556,768
Trans Pacific	65,954	59,597	. . . .	. . . .	1,327	1,295	3,472	101,906	39,175	62,731	-35,953
TWA	6,042,620	5,318,036	427,219	64,763	130,223	59,297	13,650	5,148,121	2,730,158	2,417,963	894,499
United	8,545,722	7,445,265	509,839	135,112	308,580	78,874	24,946	7,189,260	3,246,350	3,942,910	1,356,462
Western*	814,543	611,606	161,633	7,373	7,035	3,772	18,169	709,204	362,575	346,629	105,339
TOTALS	41,910,332	36,004,971	3,545,923	523,270	1,215,282	397,788	116,948	37,143,920	18,036,882	19,107,038	4,766,412

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.

NOTE: These figures are taken from monthly reports filed by the airlines with CAB. The data are tentative and subject to later change.

U. S. International Airline Revenues & Expenses for July

Airlines	Total Operating Revenues	Passenger Revenues	U. S. Mail Revenues	Foreign Mail Revenues	Express Revenues	Freight Revenues	Excess Baggage Revenues	Non-Scheduled Transport Rev.	Total Operating Expenses	Aircraft Operating Expenses	Ground & Indirect Expenses	Net Operating Income
American	$ 341,155	$ 295,856	$ 8,179	$ 6,367	$	$ 17,988	$ 4,602	$	$ 288,894	$ 151,436	$ 137,458	$ 52,260
Amer. O'Seas	2,430,758	1,794,225	353,735	91,082	147,007	. . . .	21,211	13,344	1,929,832	942,190	987,642	500,927
Braniff	360,547	201,434	134,715	2,370	. . . .	14,235	6,632	. . . .	355,940	165,879	190,061	4,607
C & S	291,456	149,636	129,295	620	. . . .	7,346	4,503	. . . .	316,622	153,035	163,587	-25,166
Colonial	102,156	71,706	29,317	248	. . . .	459	91	. . . .	120,216	56,058	64,158	-18,060
Eastern	72,568	62,030	3,783	. . . .	. . . .	5,900	855	. . . .	76,560	36,572	39,988	-3,992
National	150,671	123,625	10,764	. . . .	8,553	. . . .	2,161	5,567	133,338	56,046	77,292	17,333
Northwest	1,136,524	482,594	494,363	19,581	3,176	123,022	6,725	. . . .	814,098	335,802	478,296	322,426
Panagra	1,255,174	796,463	337,099	68,580	12,920	. . . .	40,437	. . . .	1,276,958	609,990	666,968	-21,784
Pan American												
Latin Amer.	5,436,020	4,001,882	633,239*	157,954	464,906	. . . .	126,668	8,564	5,115,453	1,950,007	3,165,446	320,567
Atlantic	5,581,769	3,297,487	1,723,447*	169,781	308,307	. . . .	80,854	-11,256	5,066,965	2,677,010	2,389,955	514,803
Pacific	3,049,570	1,619,493	1,123,088*	77,481	185,417	. . . .	27,600	-494	2,754,075	1,436,279	1,317,796	295,496
Alaska	431,728	268,319	64,168**	. . . .	74,367	. . . .	1,439	23,230	395,992	177,405	218,587	35,736
TWA	4,480,889	3,059,063	801,498	253,515	193,310	. . . .	79,209	49,032	3,516,941	1,677,407	1,839,534	963,948
United	468,878	411,996	32,643	. . . .	11,855	. . . .	3,468	. . . .	349,244	189,545	159,699	119,634
TOTALS	25,589,863	16,635,809	5,879,333	847,579	1,409,818	168,950	406,455	87,987	22,511,128	10,614,661	11,896,467	3,078,735

* Represents company's estimate of amount which should be received in accordance with the terms of the Civil Aeronautics Act when permanent rates are established. Estimate exceeds temporary rates in effect by: Latin American Div. $260,286; Atlantic Div. $1,139,738; Pacific Div. $267,624

** Temporary rate in effect exceeds estimate of amount which should be received in accordance with terms of the Civil Aeronautics Act by $80,437.

U. S. Domestic Airline Revenues & Expenses for August

Airlines	Total Operating Revenues	Passenger Revenues	Mail Revenues	Express Revenues	Freight Revenues	Excess Baggage Revenues	Non-Scheduled Transport Rev.	Total Operating Expenses	Aircraft Operating Expenses	Ground & Indirect Expenses	Net Operating Income
American	$ 8,812,818	$ 7,658,637	$ 412,577	$ 146,955	$ 497,873	$ 83,298	$ 2,290	$ 7,502,085	$ 3,734,100	$ 3,767,985	$ 1,310,733
Braniff	1,338,463	1,051,282	204,766	17,249	24,496	9,713	26,832	1,195,060	594,736	600,324	143,403
Capital	2,445,622	1,886,534	313,592	46,878	128,066	11,357	32,927	2,250,650	1,112,769	1,137,881	194,971
Caribbean	65,307	45,466	14,836	. . . .	2,886	244	. . . .	68,024	30,817	37,207	-2,716
C & S	722,438	528,639	162,533	13,719	8,255	5,991	605	656,643	280,163	376,480	65,795
Colonial	474,195	352,374	110,027	2,527	3,459	3,140	1,596	417,205	212,732	204,473	56,990
Continental	493,073	348,059	120,377	3,056	7,808	2,657	4,209	475,107	226,504	248,603	17,967
Delta	1,273,339	953,167	246,698	10,395	35,511	10,346	. . . .	1,271,826	623,384	648,442	1,513
Eastern	4,848,178	4,322,076	232,060	91,736	118,822	64,749	9,830	5,302,085	2,802,408	2,499,677	-453,907
Hawaiian	348,339	288,487	2,924	9,140	34,338	9,583	2,270	295,404	123,409	171,995	52,935
Inland*	282,136	228,318	47,142	1,534	2,801	2,191	. . . .	199,144	89,169	109,975	82,992
MCA	668,146	523,316	124,134	7,317	6,807	4,448	843	604,483	276,766	327,717	63,663
National	835,704	651,253	141,861	6,041	18,605	13,542	. . . .	1,039,815	539,184	500,631	-204,111
Northeast	693,581	536,214	139,931	4,429	7,475	4,405	466	562,955	288,616	274,339	130,626
Northwest	2,810,897	2,372,931	259,615	46,465	86,253	18,228	8,482	2,527,203	1,218,022	1,309,181	283,694
Trans Pacific	95,647	74,232	. . . .	1	2,027	1,851	13,443	119,686	40,952	78,734	-24,039
TWA	5,639,726	4,785,012	439,495	120,885	182,010	52,567	30,015	4,999,515	2,478,932	2,520,583	640,211
United	8,604,947	7,384,050	530,102	140,454	385,529	77,350	27,914	7,204,787	3,373,398	3,831,389	1,400,160
Western*	810,250	587,642	162,626	10,394	6,428	4,052	31,211	710,491	357,782	352,709	99,759
TOTALS	41,262,806	34,577,689	3,665,296	679,175	1,559,449	379,712	192,933	37,402,168	18,403,843	18,998,325	3,860,639

* Operations of Western and its subsidiary, Inland, should be considered as consolidated, although reports are filed separately as shown here.

EAL's Miami 'Rec' Center

A two-block-square recreation center with a full-time director to coordinate activities is being erected by Eastern Air Lines for its 4,000 employes in Miami.

Located directly across the street from EAL's operations and maintenance base on Northwest 36th St., the center will cost a quarter of a million dollars and will provide recreation facilities for relaxation during lunch hour as well as for longer periods after work and on week ends.

An outstanding feature of the center will be a club house complete with lounge, reading room, bowling alleys, game rooms, showers, lockers, snack bar, conference rooms and a patio for dancing and shuffleboard.

Back of the club house will be regulation size baseball and softball diamonds, horseshoe pitching pits, putting greens, a circle for flying model airplanes, and courts for tennis, handball, basketball, volleyball and badminton. Bleachers to accommodate 3,000 persons will be erected behind the baseball diamond on the northwest corner.

The center will be open to all EAL employes and their families.

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CLASSIFIED ADVERTISING

Undisplayed Advertising: $1.00 per line, minimum charge $4.00. Cash with order. Estimate 30 capital letters and spaces per line; 40 small lower-case letters and spaces per line. Add two lines if Box Number is included in lieu of advertiser's name and address.

Displayed Advertising: $10.00 per inch for less than 15 inches in one issue or in any 12-month period. For more than 15 inches, $8.50 per inch; more than 30 inches, $8.00; more than 60 inches, $7.50; more than 90 inches, $7.00; more than 120 inches, $6.50. Space units up to full pages accepted in this section for classified-type advertising.

Forms close 20 days preceding publication date. Address all correspondence to Classified Advertising Department, AMERICAN AVIATION PUBLICATIONS, 1025 Vermont Ave., N. W., Washington 5, D. C

POSITIONS WANTED

Managing-pilot presently with Northern Canadian bush flying service desires permanent position with airline or air freight carrier as pilot, with opportunity for future promotion into administrative position. Applicant would be interested in foreign employment. Total experience 1800 hours, 1000 on DC-3, age 22 and single. Contact John A. Timmins, 3527 Redpath Street, Montreal P.Q. Canada.

GENEX

Dealers in Surplus—Unused Engine and Propeller

PARTS — TOOLS

Phone: Hempstead 5746

P. O. Box 27 HOLLYWOOD, CALIF.

AIRCRAFT MATERIAL WANTED

R2000 & R2800 P&W engine parts & accessories; Douglas C47 & C54 airframe parts & accessories; Generators, starters, instruments, landing gear assys., AN fittings & hardware, electrical items, valves, spark plugs, gas caps, bearings, pulleys, etc.

FOR SALE

Largest stock of aircraft parts & components on West Coast. 100% inspection, immediate delivery.

Collins Engineering Company

9054 Washington Blvd. Culver City, Calif.

TRANSPORT SCALE MODELS AVAILABLE NOW

Finished solid scale models complete in every detail, with airline markings, insignia and color scheme. Controls in outline form, with windows and doors painted in for realistic detail. Scale propellers, and landing gears in extended position unless otherwise specified.

These attractive models make ideal personal and business gifts. Allow at least 15 days for delivery on special jobs. Shipments are insured and sent Express charges collect

22" Convair-Liner made as shown above with any airline markings and color scheme	$50.00
23" Douglas DC-3 or Super DC-3	50.00
16" Boeing 377 Stratocruiser	50.00
24" Douglas DC-4 or DC-6	60.00
28" Martin 2-0-2	75.00
18" Lockheed Constellation	40.00
17" North American B-25	40.00
16" Grumman "Mallard"	35.00
16" Grumman F6F "Hellcatt"	30.00
16" Beech Bonanza or Ryan Navion	30.00

(On all orders please specify color scheme and markings desired.)

CHRISTIE BATLAS & CO.

P. O. Box 160-FG MORGANTOWN, W. VA.

FOR SALE!

DC-4 (C-54-B-DC) 50-PASSENGER AIRPLANES

$125,000.00 and up

plus 2% sales tax

- Equipped with P. & W. R-2000-13 (2SD13G) Engines.
- Recently removed from scheduled passenger service.
- Standard airline interior.

"AS IS" MUNICIPAL AIRPORT, TULSA, OKLAHOMA

Address all inquiries to:

AMERICAN AIRLINES, INC.

Att: Director of Surplus Sales

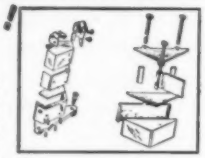
La Guardia Field, N. Y. Airport Station, N. Y.

Telephone HAvemeyer 6-8800

$200.00 CELESTIAL NAVIGATION SEXTANT $7.95

NEVER BEFORE AT A PRICE LIKE THIS—ONLY 3000 TO SELL.

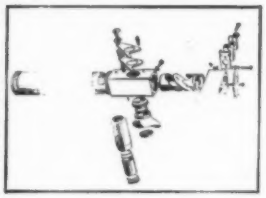
*** GENUINE AIR FORCE SURPLUS! HURRY!**



CASE INCLUDED WITH EACH SEXTANT

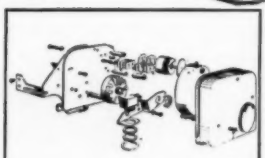
FINE PRECISION CONSTRUCTION

Here is a masterpiece in fine precision engineering that was used by the AAF for globe wide navigation of bombers. Estimated original cost was around $200.00—and now as surplus it brings a wonderful opportunity to boatmen, airmen, experimenters, inventors and other mechanically inclined hobbyists to delve into the mysteries of celestial navigation at a price anyone can afford—actually less than 4 % of original cost. Because we have only 3000 of them, its first come—first served. Only by fast action now, will you avoid possible disappointment—and we reserve the right to return your check if your order arrives after our stock is depleted.



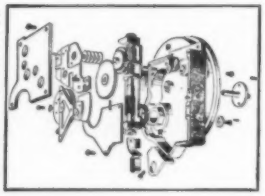
USE ON AIR, SEA or LAND

For the boatman or student of navigation the Sextant or Octant is used to determine their position on the earth's surface by means of astronomical observations of the stars, planets, etc. In the air or on the sea the navigator uses it to set his course—to accurately steer for any given point. Never before at anywhere near this price could you secure so fine a precision instrument. And it is of tremendous value to experimenters, inventors and others for the many valuable parts that make up the complete assembly.



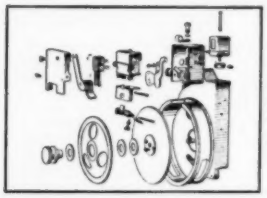
HUNDREDS OF VALUABLE PARTS

In the illustrations shown at both right and left you gain an idea of the hundreds of parts that are included. It's a veritable treasuretrove of fine lenses, prisms and other optical systems, gears, rheostats, relay, switches, timer, flash battery motor, V/R counter, bubble chamber, worm drives, solenoid, lights and light system, optical eye-piece, battery case, filters, controls, etc., not to mention a great array of fine small screws, pins, nuts, washers, springs, etc. These parts and sub-assemblies may be adapted to hundreds of other uses. The optical equipments alone are worth many times the price we are now asking for the complete outfit.



DON'T MISS THIS BARGAIN VALUE! ACT NOW

These Sextants are used. We are selling them just as we received them. Some show use more than others. They have all seen actual service in the AAF. We have not checked or "collimated" them—that is why they are being offered at this low price. There are only 3000 to sell—and they are offered strictly subject to prior sale. They wont last long at this low price.



TWO MODELS TO SELECT FROM

FAIRCHILD A10-A

Automatic timing Sextant. Includes battery case and holder, plus fine mahogany colored hardwood case, 9½ x 9 5½ ins. Case alone is worth this price. Each as illustrated

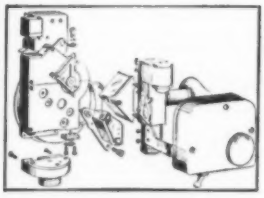
$7.95

FAIRCHILD A10

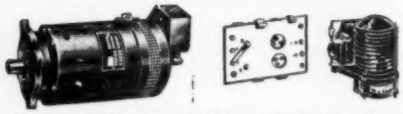
Same as model A10-A but without automatic timing system. Carrying case and battery holder included. Each only

$5.95

We will ship prepaid if you include 70c to cover postage and handling. Shp. wgt. 10 Lbs.



$200.00 Generator Set $19.95



WE SOLD GENERATOR ALONE FOR UP TO $50.00

Drastically reduced for quick sale. Original procurement cost was approximately $200.00. We sold many for as high as $50.00, hundreds more at around half that price—and now you have the opportunity to acquire one at an even lower price.

VOLTAGE REGULATOR AND MOUNTING BASE

The fine set includes the Aviation Type generator, Luce Nevelle L3, 28 volts, 25 amps., rotation CW, 2500 rpm. Measure 12 by 5 inches. Net weight 24 lbs. Outfit includes the famous Carbon Pile type voltage regulator (AN3080-1) also a convenient mounting base that is readily adaptable for most any use. The special regulator functions to hold the voltage within a given operating range (may be set up to 200 amps.) at varied generator speeds. Quantity is limited and at this low price they wont last long. Order today. Shipping weight 30 lbs.

$19.95

$100.00 Breathing Oxygen Set $7.95

Brand new surplus

*

Ready to use

*

Portable with Automatic "Demand" Type Value

A find for airmen, mountaineers, firemen, paint shop workers and others who on occasion demand extra oxygen. This popular "demand" type oxygen outfit requires no technical knowledge for use—just breathe into the mask provided and the regulator automatically delivers such oxygen as you demand. Set consists of D2 type shatterproof steel bottle 6 x 24 inches; demand type regulator AN6022-1; 0-500 lb. oxygen gauge and type A10 demand oxygen mask with hose. Net weight 7 lbs. Condition, NEW war surplus. Shipping weight 10 Lbs.

OXYGEN FILLED

Complete as described above with oxygen loaded tank. By express only—not mailable. Each complete.... **$9.95**

LESS OXYGEN

Complete outfit as described but with empty tank. Can be shipped parcel post. Each complete **$7.95**

Refiller hose, orifice and valve for charging tank with oxygen. Set only **$2.00**

ALL F. O. B. HOUSTON
SEND CHECK
OR MONEY-ORDER

AERO PARTS SUPPLY

Dept. AA, Municipal Airport
HOUSTON 17, TEXAS

Air Mail Officials Named

The Post Office Department, which has reorganized its air mail set-up in the field, abolishing the five air mail regions and creating 15 positions of assistant general superintendent-air (AMERICAN AVIATION, Nov 1), has filled 14 of the latter jobs.

Assistant general superintendents-air will be: William L. Tobin, Boston; Milton A. Pence, New York; Claud C. Hefner, Washington; Ben H. Lockett, Atlanta; Joseph R. Shahan, Cincinnati; Charles A. McIntyre, St. Louis; Arthur O. Willoughby, San Francisco; E. J. Stephens, Cleveland; Elmer J. Bornhoeft, St. Paul; Albert C. Hodges, Ft. Worth; John J. Ehrlicher, New Orleans; Miller M. Bodell, Seattle; C. G. Crossan, Omaha, and A. F. Phelps, Pittsburgh.

The official for Chicago has not yet been named. Pence, Lockett, Shahan, Willoughby and Hodges were regional air mail superintendents under the old set-up.

In some of the regions there will be district superintendents of air mail, who will work under the assistant general superintendents. Those named are Charles Spangler, Boston; Edward Heil and Alexander Serbin, New York; Joseph H. Earnest, Cincinnati; Joseph L. Fulghum, Atlanta; Alva Sole, Washington; Joseph A. Smith, Chicago; Eugene S. Ransom, San Francisco; A. J. Arnason, Los Angeles; F. L. Ethridge and B. A. McCaskill, Ft. Worth; Tollie Glaves, Omaha.

Willis B. Henderson and Harold Fogerty will work out of Washington as district superintendents-at-large.

All these officials are now in the process of moving to their new positions.

WINGS OF YESTERDAY

25 Years Ago

In the calendar years 1922 and 1923 and for the first nine months of 1924, the Mail service carried 2,000 tons of mail across the continent, only 125 lbs. of which amount was destroyed, according to Luther K. Bell, traffic manager of the service.

•

The Pioneer Instrument Co., of Brooklyn, N. Y. placed upon the market a new type of fuel gage employing the hydrostatic principle.

•

A regular aerial express freight service between London and Paris was established by the Imperial Airways Co. (Ltd.) operating one plane daily. Previously freight and express packages had been shipped along with passengers' baggage in the passenger planes.

•

According to Anthony H. G. Fokker, Dutch airplane manufacturer, about 10% of the planes built in Europe were being used for commercial purposes. The remaining 90% were going to the armies and navies.

10 Years Ago

(In American Aviation)

With record backlogs of domestic and foreign orders, U. S. aircraft and engine manufacturers were beginning to move into capacity production. Repeal of the arms embargo by Congress permitted shipment of undelivered planes to foreign purchasers and completion of existing contracts to belligerents.

•

A United Airlines crew set a DC-3 world's altitude record of 28,900 ft. during a Chicago flight made to enable University of Chicago research associates to photograph radio-active components of cosmic rays.

•

Douglas Aircraft Co. was expecting to employ 12,000 in 1940 with a record industry payroll of $20,000,000.

LETTERS

Words of Praise

To the Editor:

This is one of those spur of the moment letters that I couldn't resist writing to tell you how much I enjoy your magazine and how elated your editorial in the November 1 issue made me.

I have been an aviation enthusiast for many years and I started reading *American Aviation* when I was 16 and have been a subscriber since 1945 when I was 17 and a freshman at Denver University's School of airline-airport management.—Your magazine is above all others in its field and gives me more news and information and material to think about than any other aviaton magazine.

HERBERT E. POHLMAN
Denver, Colorado

Likes 'En Route'

To the Editor:

I like your magazine more than any other. It rates much above *Look, Life,* etc. Your new column En Route is every man's dream. Keep up the wonderful work you are doing for aviation.

GEORGE F. ALDERMAN
Lake City, Fla.

BOOKS

NATIONAL TRANSPORTATION POLICY by Charles L. Dearing and Wilfred Owen. 450 pp. $4.00. Published by The Brookings Institution, Washington 6, D. C.

This important study has already been given attention in the news columns. It recommends the creation of a federal Department of Transportation, with cabinet status, and deals with air, rail, highway and water transportation. Considerably more attention is devoted to aviation than to any other form of transport. The authors' observations will be controversial within the aviation industry for some time to come.

LEARNING TO FLY by Bert A. Shields, Lieut. Comdr., USNR. Pitman Publishing Corp., 2 W. 45th St., New York 19, N. Y. 260 pp. $4.00.

This is a new book by the author of the well-known Air Pilot Training and is intended to be a complete, practical manual for the flight beginner, as well as a valuable guide to the flight instructor. The method of presenting each item is outlined in detail and procedure is based on what the author's long experience has shown him to be the most effective method of developing the reflexes necessary to make a good pilot. Shields seeks to present in meticulous detail the instructions, advice and suggestions that a conscientious instructor passes along to his students.

PRIVATE PILOT'S HANDBOOK by A. G. Norwood. 300 pp. $4.50. Pitman Publishing Corp., 2 W. 45th St., New York 19, N. Y.

This practical manual for the private flyer has been revised, rearranged and greatly expanded by the author, who wrote the Civil Aeronautics Authority's original textbooks and has since assisted in the supervision of training of thousands of pilots and hundreds of instructors.

It gives complete information on flight theory, meteorology, aerial navigation, use of the radio, Civil Air Regulations and other phases of flying, stripped of non-essential mathematics and scientific language.

OBITUARY

James L. Younghans

James L. "Jimmy" Younghans, veteran Allison Division test pilot with 6,000 hours flight time, died suddenly at his home in Indianapolis, Ind., October 31. Younghans, 34, was seized with a heart attack after a trip to Wright-Patterson AFB.

Air Transport Scholarship

The Women's National Airport Club of Washington has created a scholarship in air transportation at the University of Maryland. The $100 scholarship is to be awarded each year in June to the outstanding junior or senior specializing in transportation and who has taken at least two of the air transportation courses offered at the university.

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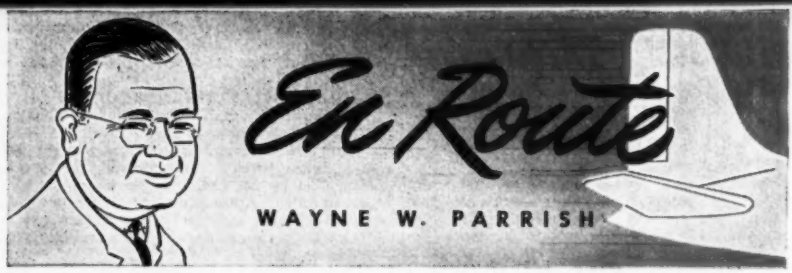
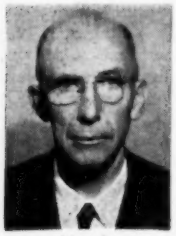


ORTON HOOVER. Down in **Sao** Paulo, Brazil, last August, a balding, thin-faced man with prominent Adam's apple and looking very much like a midwestern farmer, sought me out of a crowd at the airport and introduced himself as a long-time subscriber to AMERICAN AVIATION. Never one to shun a subscriber, especially in far-off Brazil, I snapped to full attention. His name sounded vaguely familiar but at the moment I couldn't place him. In a very modest but sincere way he wanted to be of assistance to me.


Hoover

He remarked that he could, perhaps, tell me a few things about aviation in Brazil. As events proved in quick order, this turned out to be the prime understatement of the year. Over cups of thick, heavily-sweetened coffee and a luncheon in a small but excellent American-Brazilian restaurant on a Sao Paulo sidestreet, I filled my notebook with the story of one of the most interesting of America's aviation pioneers.

For the shy, unobtrusive man who offered to help me out was none other than **Orton W. Hoover,** an American who accompanied some of this country's earliest airplanes to Brazil and remained there to become the father of aviation in that country. More than any other individual, Orton Hoover kept U. S. aviation alive in Brazil between the two world wars.

The mere mention of Orton Hoover's name to **Lt. Brigadier Armando Trompowsky,** Minister of Air for Brazil, lightens up his eyes. Virtually every top airman of Brazil who learned to fly before 1940 was trained by this plucky American.

Back in 1910 at Indianapolis, Hoover saw the Wright brothers fly. As it did to many another lad in those days, the airplane bug bit him hard. It got deep into his system. He was determined that aviation was his future. Like many another ambitious lad in those early days, he built his own airplane. But the power stopped him—$3,000 for an engine was beyond his means. So he did the next best thing; he went to New York to get a job at the old Nassau Boulevard Airport on Long Island, operated by **George Beatty.** He recalls that one of his associates was **Alex-Hamilton.**

Then one day a man by the name of **Marshall Reed** bought an airplane and invited Hoover to go with him and the airplane to Philadelphia. Hoover was both a mechanic and a pilot. After a time with Reed, he moved to Chicago in 1913, and built a copy of the Curtiss flying boat for a man by the name of **McDonald.** Hoover doesn't recall very much about him except that he had been taught to fly by **Jack Vilas,** a well-known aviation old-timer who has for many years been active in the Pyle-National Company, a lighting firm in Chicago; Hoover took hunting and flying trips with Vilas in Wisconsin.

When war broke out in Europe and the British placed an order for Jennies with the Curtiss Aeroplane Co. of Buffalo, Hoover joined up with the factory. But in 1916, before the U. S. got into the war, the Curtiss company sold three flying boats powered with 60 h. p. OX-2 engines to the Brazilian Navy. Hoover was elected to accompany the aircraft by steamship to Rio and the Brazilians were so impressed by his flying and mechanical abilities that they asked him to stay on to train their pilots. He trained 18 before returning to Curtiss.

Next came a stint at training U. S. Navy pilots at Newport News, Va., until the end of the war. When hostilities ended, Curtiss was trying to expand its markets and sent Hoover in 1919 as its salesman to Brazil. He landed an order from the State of Sao Paulo but with the proviso that he stay there and do the training. All went well until the government changed. Then Curtiss went broke. So Hoover decided to open up his own flying school at Sao Paulo with several Jennies and an Oriole.

Remember this was just after World War I. In the two years 1920-22, Hoover licensed 24 pilots. After the Curtiss reorganization he sold a half million dollar order to the Brazilian Navy and in 1922 operated the air sightseeing concession at the World's Fair in Rio, beating out the rival Germans and Italians.

At the end of the Rio fair, the State of Sao Paulo again showed some interest in a state-owned air fleet and Hoover opened up a school again and sold quite a bit of new equipment. Until 1930 the school prospered under state supervision and during this period Hoover designed and built his own airplane, called the Sao Paulo. Everything was going ahead swell until, bingo, another revolution, and everything, planes and shops, was burned up. Not only that but Hoover went to prison for nine days until he was cleared of any connection with it.

Then he tied up with **Henrique Santos Dumont,** nephew of the famous Brazilian aviator, Santos Dumont, operating a flying school and building gliders. In 1931 came another revolution and everything was lost again. So Hoover hied himself to the U. S. for a year and a half to look around and acquire a transport license. Conditions were none too good up here so in 1934 he returned to Brazil and tied up again with Henrique Santos Dumont in a new company. He built five of his own planes and was a dealer for a line of U. S. equipment. Until 1937 everything went well again.

But in 1938 the Brazilians decided to prohibit all flying by foreigners. The law was designed not against men like Hoover but against Germans and Italians and for two years he managed to get by. But Hoover's activities became more restricted by war laws and he took a job with the U. S. Consulate.

And there Orton Hoover is today, still following aviation avidly in Brazil and still one of the best goodwill ambassadors U. S. aviation ever had anywhere. Revolutions, set-backs and wars have failed to discourage him. He is beloved by every Brazilian airman and his counsel is highly respected in all aviation circles down there. They trust him and Hoover likes them. The lad who watched the Wright brothers fly in Indianapolis 39 years ago has carved a deep niche for himself in air history and the U. S. should be just as grateful for what he has done as is Brazil.

* * * *

THE LADY SUCCEEDS. Remember **Midge Gage?** She used to do a lot of flying around Roosevelt Field on Long Island and was well known to a great many in the aviation fraternity. She is now Marjorie Gage Pradu, wife of one of the wealthiest men in Brazil. She and her husband entertained Capt. Eddie Rickenbacker and his party in one of her numerous homes at Sao Paulo. I say "home" with qualification —it was a richly-furnished mansion in the midst of beautiful grounds. Midge is one of Brazil's most popular matrons now and hasn't lost any of her good looks.

* * * * *

TIES THAT SCREAM. Maybe there's something to this "life begins at 40" stuff. Up until I reached that ripe old age I thought any tie that cost over a buck was a waste of money. I'd wear 'em until they were in shreds. Then one day I spotted **C. R. Smith,** president of American Airlines, with a very loud one. It had a fancy design and the initials "C. M." on it. In my ignorance of hot looking ties, I didn't know that those initials stood for Countess Mara and that Countess Mara was the name of a special brand of ties.

That started it. Ever since then I've been on a color binge. Countess Mara ties being priced as they are, my collection of eye-splitters is on the modest side, but I picked up five very flashy ones at the Liberty shop in London in June for a few bucks. Apparently my sudden shift into blatant colors and odd combinations began to attract attention because one day I got a beaut in the mails from someone (whose name I have regrettably forgotten) from Curtiss Airplane at Columbus. At the time, this contribution held the leadership. But the competition is all over now. Those advertising and public relations gents of Philadelphia, **J. Branch Briggs** and **Tom Hall Miller,** have donated a tie that can't be beat for brightness and color. It is almost repulsively loud and has every color in the rainbow. I wore it for one day in Oklahoma but haven't dared put it on in Washington—yet.

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J. W. Miller, president of Mid-Continent Airlines, Inc., entered the aviation field in 1925 as secretary of the Daniel Guggenheim fund for the Promotion of Aeronautics. Joining Mid-Continent in 1936, Mr. Miller has served the company as vice president, general manager and president.

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